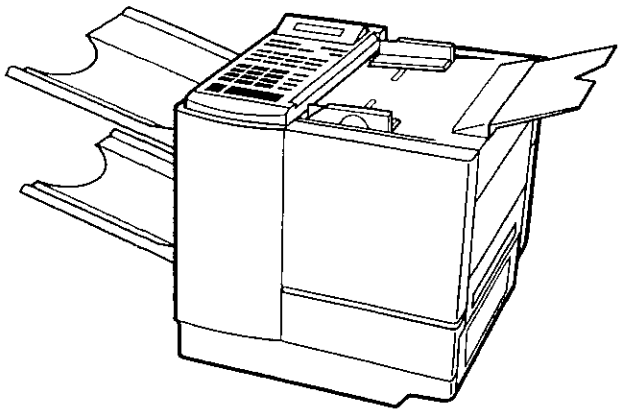
SHARP SERVICE MANUAL

CODE: 00ZF5300DSM1E



FACSIMILE

MODEL FO-5300

CAUTION

This laser printer is a class 1 laser product and complies with 21CFR 1040.10 and 1040.11 of the CDRH standard and IEC825. This means that this machine does not produce a hazadous laser radiation. The use of controls or adjustments or performance of procedures other than those specified herein may result in hazadous radiation exposure.

This laser radiation is not a danger to the skin, but when exact focusing of the laser beam is achieved on the eye's retina, there is danger of spot damage to the retina.

The following cautions must be observed to avoid exposure of the laser beam to your eyes at the time of servicing.

1) When a problem in the laser optical unit has occured, the whole optical unit must be exchanged as a unit, not as individual parts.
2) Do not look into the machine with the mains switch turned on after removing the developer unit, toner cartridge, and drum cartridge.
3) Do not look into the laser beam exposure slit of the laser optical unit with the connector connected when removing and installing the optical system.
4) The upper frame contains the safety interlock switches.

   Do not defeat the safety interlocks by inserting wedges or other items into the switch slots.

   The required Labels and hazard warnings from IEC standard 825.

   (220V, 240V machine only)

CLASS 1
LASER PRODUCT

LASER KLASSE 1

Out put power of laser diode : 3mW
Laser wave length : 780mm

CAUTION

INVISIBLE LASER RADIATION,

WHEN OPEN AND INTERLOCKS DEFEATED.

AVOID EXPOSURE TO BEAM.

VORSICHT

UNSICHTBARE LASERSTRAHLUNG,
WENN ABDECKUNG GEÖFFNET UND
SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT.
NICHT DEM STRAHL AUSSETZEN.

VARO !

AVATTAESSA JA SUOJALUKITUS
OHITETTAESSA OLET ALTTIINA
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE ÄLÄ
KATSO SÄTEESEEN.

ADVARSEL

USYNLIG LASERSTRÅLNING VED ÅBNING, NÅR
SIKKERHEDSBRYDERE ER UDE AF
FUNKTION. UNDGÅ UDSAETTELSE FOR
STRÅLNING.

VARNING !

OSYNLIG LASERSTRÅLNING NÄR DENNA DEL
ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD.
BETRAKTA EJ STRÅLEN. – STRÅLEN ÄR
FARLIG.

SHARP CORPORATION

This document has been published to be used
for after sales service only.
The contents are subject to change without notice.

This manual is used for FO5300 D and D1 version.

Version	Country
D	GERMANY SWITZERLAND
D1	DENMARK SWEDEN NETHERLANDS ITALY

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CHAPTER 1. GENERAL DESCRIPTION

[1] Features

1. Automatic dialling

1) AUTO COVER SHEET — When selected with the user switch, this model will generate a cover sheet as the last page of each transmission.
2) AUTODIALER — includes 99 telephone numbers each for fax and voice calls. Twenty each of these numbers are dialed using the rapid keys, while the balance are accessed with 2-digit speed-dial codes. The 20 rapid key numbers for fax calls also offer a secondary fax "back-up" number, which is automatically dialed when the primary number is busy. Three of these fax rapid keys can be used to store programs of frequently-used transactions.
3) AUTOMATIC DOCUMENT FEEDER — A4 wide feeder can accommodate up to 50 pages at a time for automatic through-put.
4) AUTOMATIC/MANUAL CONTRAST CONTROL — contrast is automatically adjusted during scanning to compensate for documents with light print or documents with dark colored backgrounds. A manual contrast control is also provided to maintain legibility of extra-light originals.
5) AUTOMATIC RECEPTION — suited for a dedicated fax line whereby all calls are answered automatically by the fax unit. Setting is selected with the MANU/AUTO switch.
6) AUTOMATIC REDIAL — when a dialed fax number is busy, this model automatically redials the number twice at 2.5 minutes interval.
7) AUTOMATIC REDUCTION — when transmitting documents wider than 234", this model automatically detects the document's size and reduces the image information to fit the recording paper in the remote unit. This model scans up to a 280" width area and reduces the image to 210" in width before transmission.
8) BATCH PAGE NUMBERING/COUNT CHECK — Simple numbering (p.01, p.02) of each transmitted page can be replaced with batch page numbering (p. 1/2, p. 2/2) when selected before transmission. This model gives an alert through an alarm, readout and report if the actual number of pages transmitted does not agree with the number of pages entered by operator.
9) CCITT GROUP 2 & 3 COMPATIBLE — provides compatibility with older Group 2 type machines as well as with the Group 3 worldwide standard.
10) CONFIDENTIAL TRANSMISSION — confidential documents can be transmitted to a Sharp unit with confidential reception capability, and directed into memory instead of being printed out. The stored documents at the remote unit are then only printed when an authorized passcode is entered.
11) DATE & TIME — appears in the display, reports and at the top of all transmitted copies.
12) 13-SECOND TRANSMISSION SPEED — speed that this model can transmit an A4 size average letter to another Sharp unit, using Sharp's special compression scheme, 9600 bps modem rate, and standard resolution for the Sharp standard chart.
13) HALFTONE CONTROL — areas on a document that contain photographs and shaded drawings are broken-down in 16 levels of gray during scanning and transmission.
14) LASER PRINTING ON PLAIN PAPER — This model prints on plain bond paper that can be marked and filed without worry of discoloration or fading. Using laser printing, the cost per copy is also substantially reduced compared to thermal, thermal-transfer, and ink-jet systems.
15) MANUAL RECEPTION — when set with the MANU/AUTO switch, all calls must be answered by an operator.
16) MULTI-COPY — in addition to making a test copy to check reproduction quality before transmission, this model can also function as a convenience copy allowing up to 30 copies to be made with one pass of the originals through the machine.
17) (SIMPLE & SERIAL) POLLING — allows this model to call up to 99 remote units and initiate a transmission back to this model from each unit.
18) POLLING SECURITY — restricts which remote units can poll this model through the use of 5 polling permission ID codes and 10 polling permission telephone numbers.
19) PROGRAMMABLE TRANSACTION REPORT — with a user switch, one of four conditions can be selected for the print-out of the Transaction Report. Options include after only a timer, or error condition, or after every transmission and reception, after every transmission only, or disabled altogether.
20) REDIAL KEY — used to redial the last-dialed telephone number.
21) RELAY BROADCAST REQUEST — as a form of indirect broadcasting, this model can transmit a document to the memory of a Sharp FO-750, FO-800, FO-3200 or FO-6000, and instruct that unit to forward the same document to a maximum of approx. 140 end-receiving stations. This feature can be used to cut phone line costs when the intermediate Sharp unit is in closer proximity to the end-receiving stations than this model.
22) REMOTE TERMINAL IDENTIFICATION (RTI) — your fax telephone number that appears in the display of the remote unit during a transaction and is added to the TTI imprint on transmitted copies. This ID also serves as your polling permission number which is checked by a remote terminal when your unit attempts to poll that unit.
23) REPORTS/LISTS — variety of reports available for reference and troubleshooting.
24) SECOND CASSETTE & LEGAL-SIZE OPTIONS — The bottom-mounted, easy-to-refill cassette tray, which holds 250 letter-size sheets, can be interchanged with a legal size cassette as an option.
    A second feed unit and cassette (either letter or legal size) can also be added to double the capacity.
    Automatic paper size selection is activated when each cassette holds a different sheet size.
25) STANDARD/FINE RESOLUTION SETTINGS — documents can be scanned and transmitted in the standard mode for minimum phone line time and cost, or sent in the fine mode for best reproduction of documents with smaller copy and detailed graphics.
26) SUBSTITUTE "BACK UP" RECEPTION — incoming documents are automatically stored in the 128KB memory when the recording paper is depleted or if a paper jam occurs during communication. The stored documents print-out when paper is added or the jam cleared. An average of 7 pages for the reception in progress can be stored.
27) TALK FUNCTION — allows you to speak with an operator at a remote unit and conduct a fax transaction during the same call.
28) TIMER TRANSMISSION/POLLING — an operation can be set-up to take place at a later time unattended: such as after-hours or during low phone rate periods.
29) TRANSMIT TERMINAL IDENTIFICATION (TTI): a 24-character ID that is added to the top of each transmitted copy, along with the date, time, telephone number and page number.
30) TURNAROUND POLLING — allows this model to send and receive documents on one phone call with the same remote unit.

[2] Specifications

Model name : FO-5300

(1) Applicable telephone line : Public switched telephone network (3.4 KHz)

(2) Configuration : Desk-top transceiver

(3) Transmission method : Half-duplex

(4) Build-in LIU : Type AA, MA, MM

(5) Compression scheme : MH, Sharp's Original (H2 mode)

(6) Synchronization method : Transmission synchronization

(7) Compatibility : CCITT G3 and G2

(8) Transmission rate : 9,600/7,200/4,800/2,400bps automatic fallback

(9) Transmission time : 13 seconds

The time required in phase C to transmit CCITT No.1 CHART document (A4 size) at the speed of 9600 bps in the standard mode.

(10) Modulation scheme : QAM/PSK/FSK/AM-PM-VSB

(11) Display unit : LCD 16 columns (7 x 5 dots) x 2 lines automatic shift

(12) Telephone : None

(13) Auto-dialling : Rapid dialling 20 numbers
Speed dialling 99 numbers (incl. rapid dial)

(The number of digits is limited to 30 for a phone number entry, and 20 for a receiver name entry. A pause is counted as a digit.)

Key dialing/redialing
alternative destination dialing/reorigination

(14) Half-tone transmission : Yes (16 gradations and density is fine mode)

(15) Contrast control : Automatic

(The user is also allowed for a selection among 4 darkness degrees in manual mode.)

(16) Auto document feed : Up to 50 sheets

(17) Document size : From 5.8" (148mm) wide x 5.0" (128mm) long to 11" (280mm) wide x 39.4" (1000mm) long (G3 mode)

(18) Effective scanning width : G3 mode ... 8.3" (210mm) max.
G2 mode ... 8.1" (205mm) max.

reduction : G3 mode ... 10.1" (256mm) max.

(19) Automatic reduction : Available (B4 to A4)

(20) Scanning method : Flat-bed solid-state CCD

(21) Resolution (Density) : Standard mode
Main scan: 8 pixels/mm
Sub scan: 3.85 lines/mm
Fine-half-tone mode
Main scan: 8 pixels/mm
Sub scan: 7.7 lines/mm

Any mode is selectable. If the remote fax machine does not have the mode selected, this model falls back to an available mode.

(22) Recording system : Plain paper recording by semiconductor laser electophotography

(23) Recording paper size : 210mm x 297mm (A4 size)

(24) Paper feed system : Cassette type
(250 sheets cassette stored under the machine)
Letter size cassette (U.S.A and Canada) or A4 size cassette (Other contry)
Manual paper feed (copy only)
A4 or letter or smaller size sheets can be feed one by one to copy documents.

(25) Print speed : 6 sheets/minute

(26) Density : Main scan 404 dpi
Sub scan 396 dpi

(27) first print : approx 16 seconds

(28) Heating stabilizing time : Approx. 60 sec. (at the rated voltage, room temperature of 20 to 25°C (68 to 77°F) and 65±5%RH)

(29) Fixation : Thermal fixation

(30) Developing system : Magnetic brush development (2-component developer), black only

(31) Cleaning method : By means of the cleaning blade embedded in the drum cartrige

(32) Fusing method : Heat roller type
Upper fuser roller (teflon coated)
Lower fuser roller (silicone rubber)

(33) Recording area : 8 inch x 10.5 inch
Inch series:

(34) Power requiremants : 220 ~ 230VAC 50Hz

(35) Dimensions : 357mm (W) x 383mm (D) x 349mm (H)

(36) Weight : Approx. 20.0kg (44.0 lbs)

(37) Ambient condition : Operating temperature: 10° to 30°C (50~86°F)

(38) Relative humidity : 20 ~ 85% RH

(39) Power consumption : 23W (standby), 500W max. (in operation)

(40) Accessores
See Chapter 1-[3]

(41) Supplies
See Chapter 1-[4]

(42) Options
- 2nd cassette unit : FO52SU
- A4 cassette : FO52A4

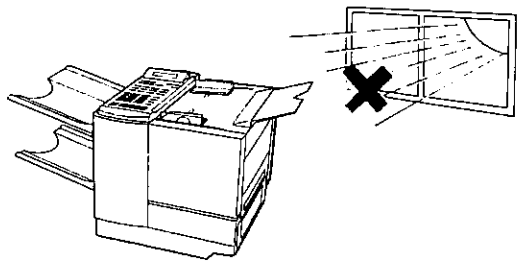
[3] UNPACKING AND INSTALLATION

1. Installation requirements:

Please note the following requirements when installing the machine.

1) Machine Environment

① Avoid installation in direct sunlight or bright locations near a window.
Direct sunlight may cause the plastic components to deform or discolor.
Use a curtain or shade to block the light. Frosted glass may also produce the same effect.

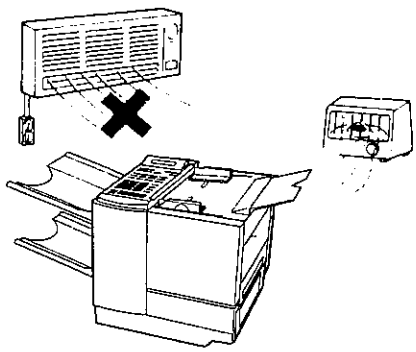


② Avoid installation in a hot, damp place or where rapid changes in humidity occur (for example; near an air conditioner).

This may cause paper to dampen or frost to occur inside the machine, and may lead to a misfeed and a deterioration in the print quality.
The recommended environmental conditions are:

20 to 25°C (68 to 77°F.), 65%±5%RH.
The nominal environment conditions are:
10 to 30°C. (40 to 86°F.), 20 to 85%RH.

If the temperature is 35°C. (95°F), the humidity should be 60%.



③ The toner density and print quality may be affected unless the machine is installed in a level condition.

④ Avoid installation in a place where dust or vibration is encountered.
Dust deposits inside the machine may lead to a deterioration of print quality or machine trouble.

⑤ Do not install the machine on an unstable or uneven surface. The machine must be placed on a level surface to permit proper functioning.

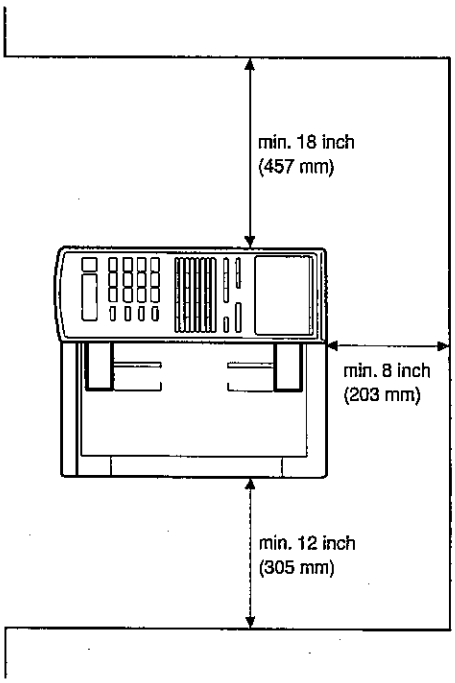
⑥ Avoid installation in a place where the ventilation or air circulation is poor.

⑦ Never install the machine near inflammable materials or in the presence of ammonia fumes.
Installation near a diazo copy machine may lead to a deterioration of print quality or a machine malfunction.

⑧ Install the machine near a wall outlet.

2) Space around the machine

The machine requires at least 8 inches of clearance between the rear side and the wall. This space is required for proper cooling fan ventilation. Adequate working space around the machine should also be allowed for ease of operation.



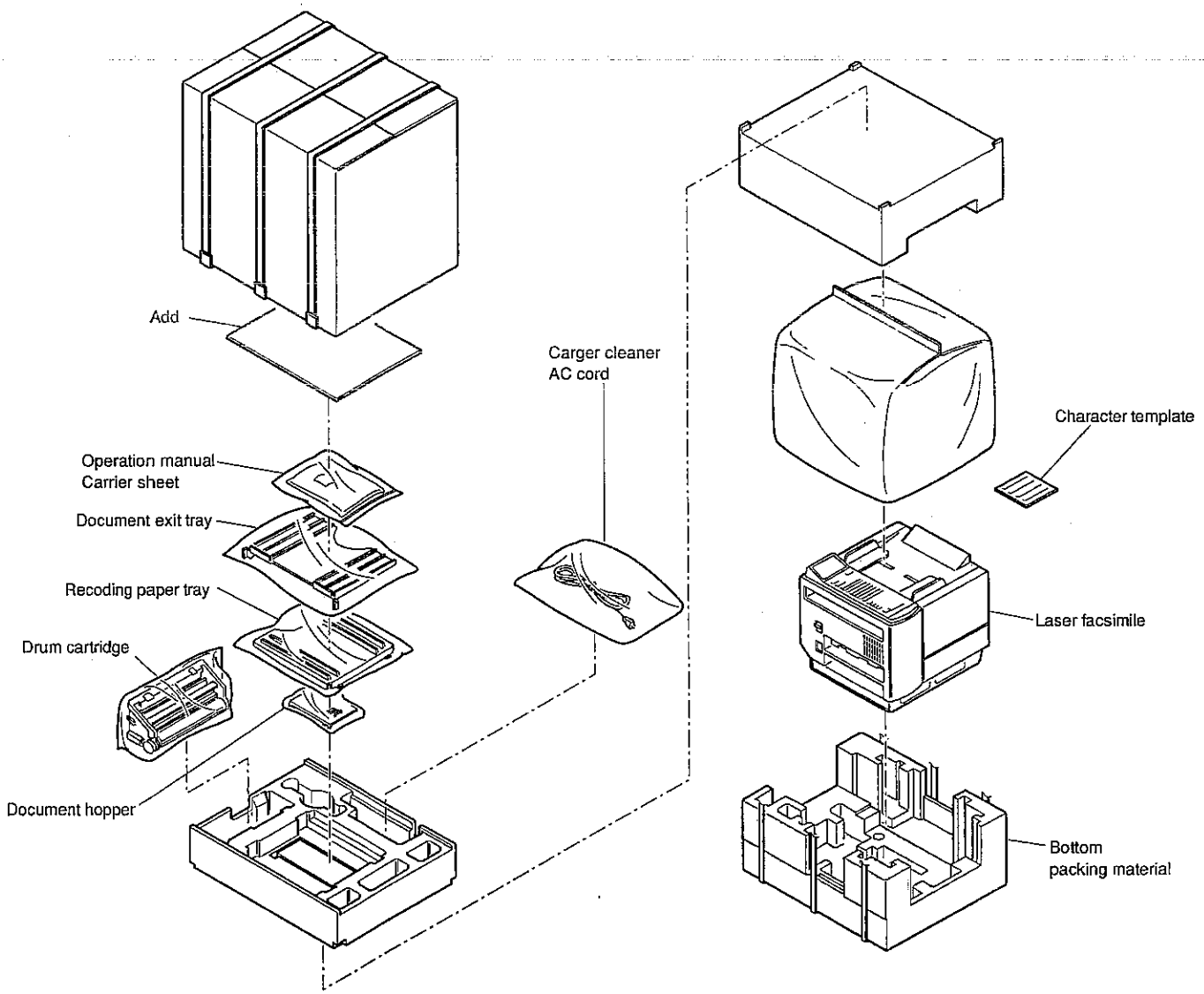
(NOTE) When moving or relocating the unit, first remove the toner waste toner box and developer cartridges.

2. Unpacking

1) Metallic surface of the machine might be frosted due to a abrupt temperature change when the machine is brought inside the room during cold weather and may lead to a paper misfeed or print quality deterioration. Leave the carton unopened in such a case and leave it in the room for more than one hour before opening the carton.

No.	Job description	Check item	Note
1	Place the carton where space is available for opening the package.	Check the carton for damage.	Two persons are required to move the carton as its weight is 20.0kg (44.0 lbs.)
2	Remove tape on the top part of the carton and open the top flap.		
3	Remove the top padding and take out the accessory and supply package.	The following accessories and supplies are included. • AC cord • Cassette • Operation manual • Drum cartridge • Carrier sheet • Caracter template • Recording paper tray • Document hopper • Document exit tray	Cassette is placed in the machine.
4	Remove the top cushion.		
5	Take out the unit.		See Paragraph 2) for the installation procedure.

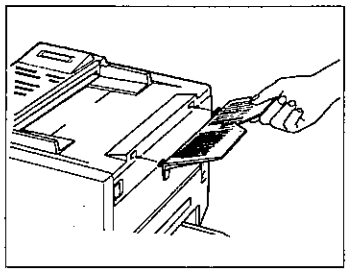
Carton breakdown view



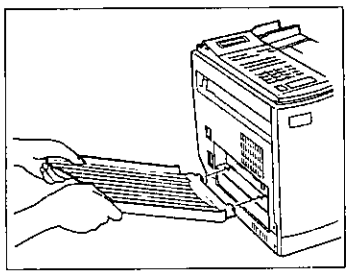
3. Installation procedure

1) MOUNTING DOCUMENT HOPPER AND TRAYS

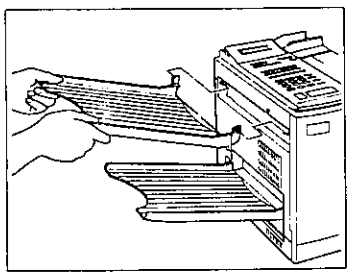
① Original Document Hopper – mount this tray to provide support to originals that are placed in the feeder.
To mount tray, slightly bend the center of the tray, and insert the ends into the slots on top right side of the machine as shown.



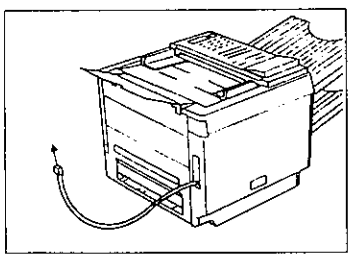
② Copy Tray – mount this tray as shown to hold copies that are received or made.



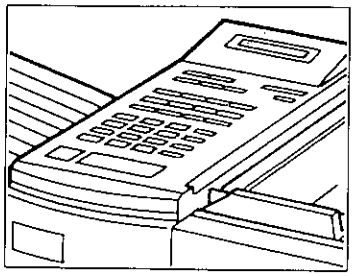
③ Original Document Exit Tray – mount this tray to hold documents after they are fed through the machine. Insert the end of this tray into the slots on the left side of the machine as shown.



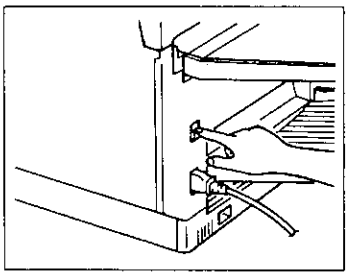
④ Connect the machine to the telephone line.
Insert the plug on one end of the connection cord into the jack on the right side of the machine marked, "TEL LINE." Insert the plug on the other end into the telephone jack on the wall.



⑤ Adjust the angle of the LCD panel for best viewing, by lifting the panel by its left side tab.



⑥ Plug the female end of the power cord (supplied) into the left side of the machine. Plug the male end into a 220V, 50Hz isolated and grounded 2-prong with earth outlet. Turn on the power switch, located on the left side of the machine, only after all supplies have been installed.

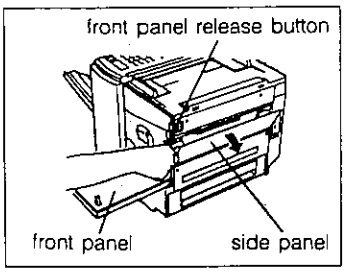


2) INSTALLING AND INITIATING SUPPLIES

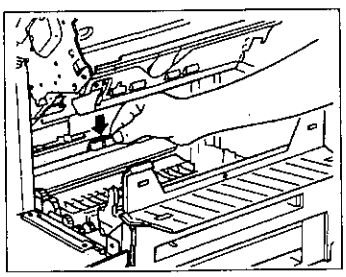
Notes: Set-up of the FO-5250 requires one each:
Developer cartridge FO-52DC
Toner cartridge FO-52TC

(1) Installing the Roller Cleaner and Toner Collecting Container

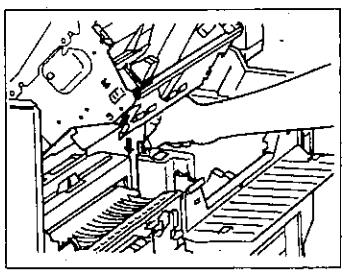
① Disconnect the Power cord.
Press the front cover release button and open the front cover and side cover.



② Remove the roller cleaner from its plastic bag.
Install the roller cleaner on top of the fusing unit.



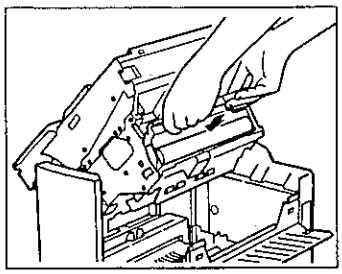
③ Install the toner collecting container.



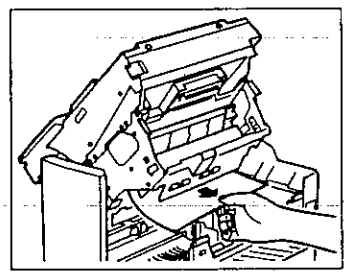
(2) Installing the Photoconductor Cartridge

① Remove the photoconductor cartridge from its plastic bag. BE CAREFUL NOT TO TOUCH THE PHOTOCONDUCTIVE DRUM.

② With the photoconductive drum facing down, insert the photoconductor cartridge into the machine, sliding it along the guides.

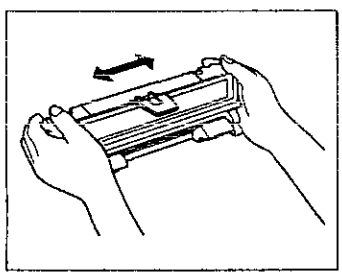


③ Hold the upper unit and pull the green tab to remove the protective sheet.



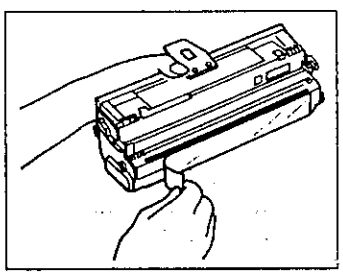
(3) Installing the Developer Cartridge

① Remove the developer cartridge from its plastic bag, taking care not to damage it.
Shake the developer cartridge vigorously in a horizontal direction four or five times.

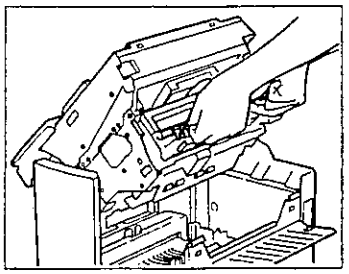


② Place the developer cartridge on a level surface, hold it in place, and remove the covering material.

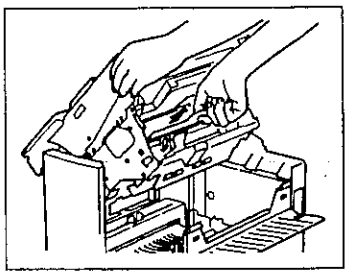
- Be careful not to touch the developer roller.
- Do not remove the sealing plate on the other side of the developer cartridge.



③ Press the levers on the developer cartridge with both hands and slide it into the machine along the guides.

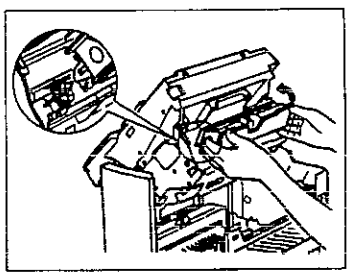


④ Remove the tape securing the sealing plate and pull out the sealing plate.

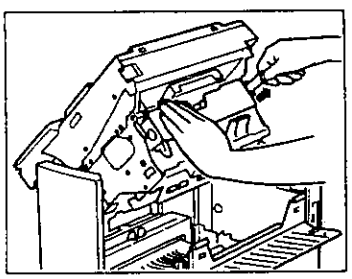


(4) Installing the Toner Cartridge

① Shake the toner cartridge horizontally four or five times.
Align the toner cartridge slots with the developer cartridge hooks, and rotate unit it clicks and is securely attached.



② Hold the toner cartridge and pull out the sealing tape from the toner cartridge.
Tap on the toner cartridge four or five times to release all the toner into the developer cartridge.



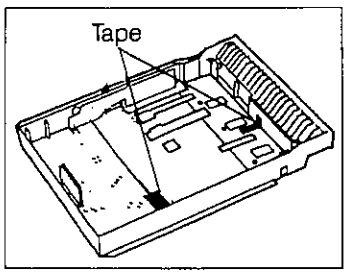
③ Close the upper unit.

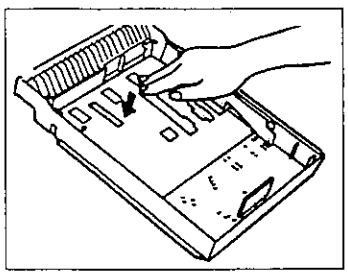
3) LOADING PAPER

The paper cassette feeds paper for automatic feeding and can hold about 250 sheets of standard weight paper (16 to 21 lbs. or 60 to 80 g/m^2 weight).

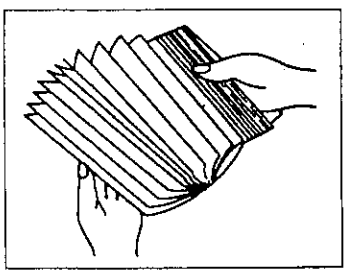
- When using the paper cassette for the first time, be sure to remove the securing tape shown below before loading the paper. (Follow the same procedure when using the optional cassettes.)

① Push the pressure plate until it locks in position.



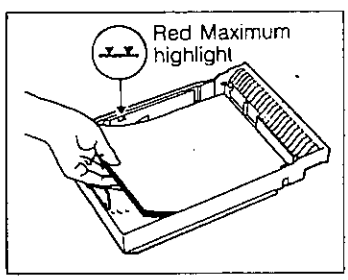


② Fan up to 250 sheets of standard paper.

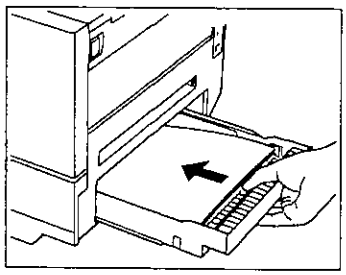


③ Place the paper in the cassette with the corners under the metal corner tabs. Remove some paper if the paper is tight under the metal corner tabs. Shake the paper cassette gently to straighten the paper.

- Note that the side facing down is the printing side.
- Do not load paper above the red maximum height line, or paper may misfeed.



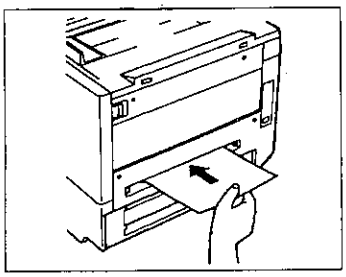
④ Slide the paper cassette into the machine until it locks in place.



4) Manual Sheet Feeding in Copying Mode (Legal-size Paper)

The manual sheet feed option allows for the feeding of legal-size papers.

1. Insert a single sheet of paper into the manual feed slot.
   Feed papers in lengthwise.
   The paper will be fed automatically.
   Insert only one sheet at a time in copying mode.
   Note the side facing up is the printing side.
   Press START/COPY key.



NOTE: The recommended environmental conditions are:
20 to 25°C (68 to 77°F), 65%±5% RH.
The nominal environment conditions are:
10 to 30°C (40 to 86°6F), 20 to 85% RH.
If the temperature is 35°C (95°F), the humidity should be 60%.

5) ABOUT THE GREEN LED OF THE START/COPY KEY

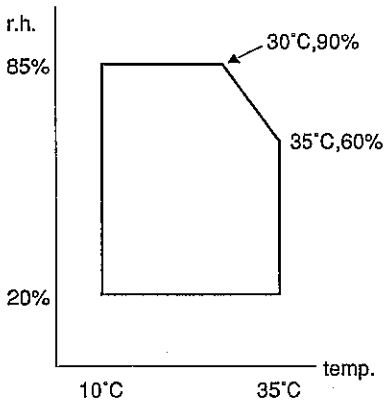
The same LED indicates the status of the unit and the warming up status of the laser beam printer.

Status	LED
Warming up directly after power ON	Flickering
Standby (after warming up)	Lit
Standby (when heater is OFF)	Out
Standby (during warming up after turning heater ON again)	Flickering
Copying	Flickering
FAX receiving	Flickering
Printing communications results table	Out
Printing memory substitute and confidential received data	Out
Printing list	Out

NOTE: When the START/COPY key is pressed in the heater OFF mode, the LED will flicker unit warming up is completed.

4. Operational conditions

The following show the range within which the machine including its supplied items can properly function:
The maximum allowable temperature and relative humidity variations are 10°C/hour and 10%/hour respectively, and no dew condensation is allowed.



If the temperature is 35°C (95°F), the humidity should be 60%.

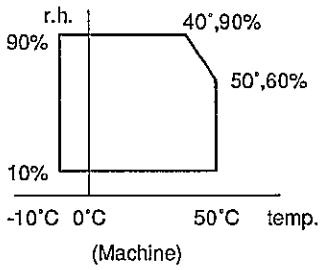
1-2) Standard conditions

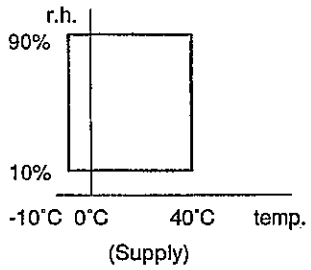
Temp. and r.h. for measuring the density, fog, etc.: 20 to 25°C and 65 ±5%.

1-3) Non-operating conditions

Requirements for leaving the machine in a room or other similar environment with its power off and with its supplied items mounted:
5 to 40°C of temp. and 10 to 90% of r.h. with no dew concentration allowed.

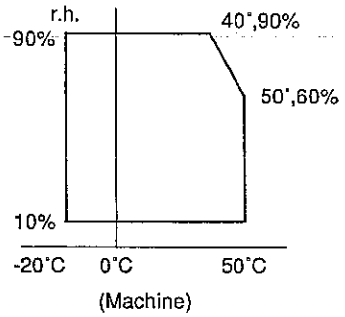
1-4) Storing conditions

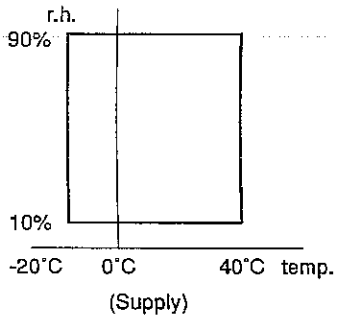




1-5) Transporting conditions

The maximum allowable temp. and r.h. variation rates are respectively 20°C/hour and 15%/hour. No dew concentration is allowed.





[4] SUPPLIES

1. Kinds of papers

Standard Papers

- Automatic Feeding from the Paper Normal Cassette

Sizes		
AB series	A4 210 x 297mm	
Weights	16 lbs 60 g/m²	↔ 21lbs 80 g/m²

- Manual Feeding

2. Drum cartridge, developer cartridge, toner cartridge, waste toner box, cleaning oil pad.

	Name	Description	Product name	Pcs/pack	Life	Storage period
1	Drum cartridge	Drum cartridge Instructions	FO-52DR	5	*1	24 months after the production month (not unpacked) (Condition) Humidity: 10~90% Temperature: –10~40°C
2	Developer cartridg	Developer cartridge Instructions	FO-52DC	5	*2	
3	Toner cartridge	Waste toner box Instruction Roller cleaner Toner cartridge	FO-52TC	5	*3	

*1: Maximum print life is 50,000 pages.

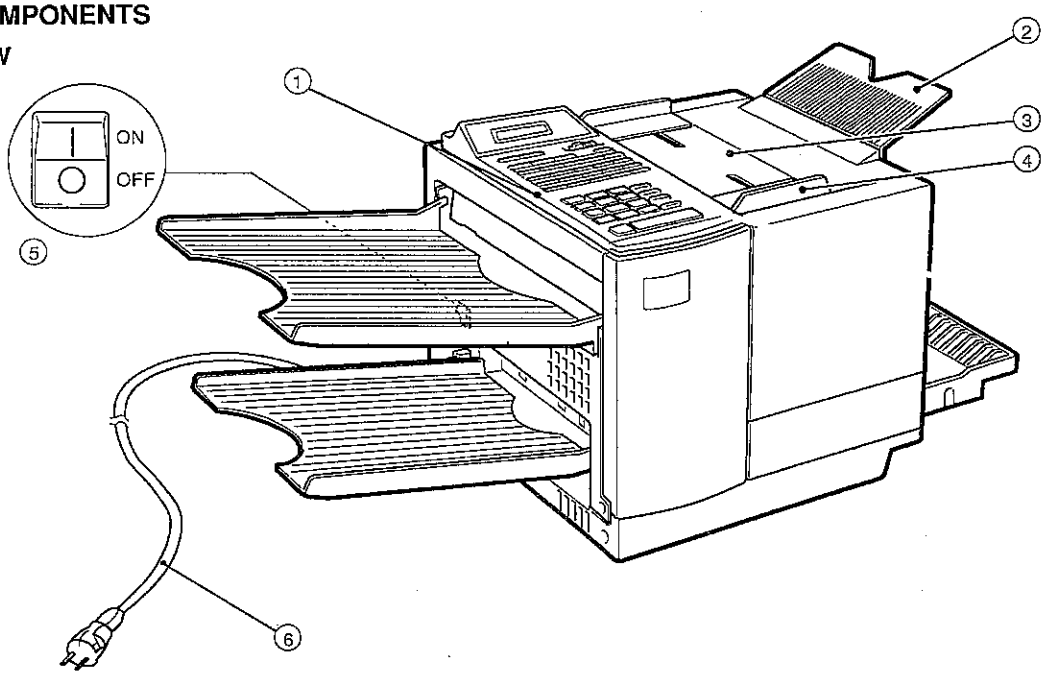
*2: Maximum print life is 25,000 pages.

*3: A4 (8-1/2" x 11"), 4% black image area, 3,000 pages (fine mode/multi-copy)

[5] MAJOR COMPONENTS AND INTERNAL STRUCTURE

1) MAJOR COMPONENTS

(1) FRONT VIEW



① **Control Panel** – Use for transmission, copying, voice communication, and various programming jobs. Open to clear the document.

② **Original Document Hopper** – Provides support to long originals set in the feeder.

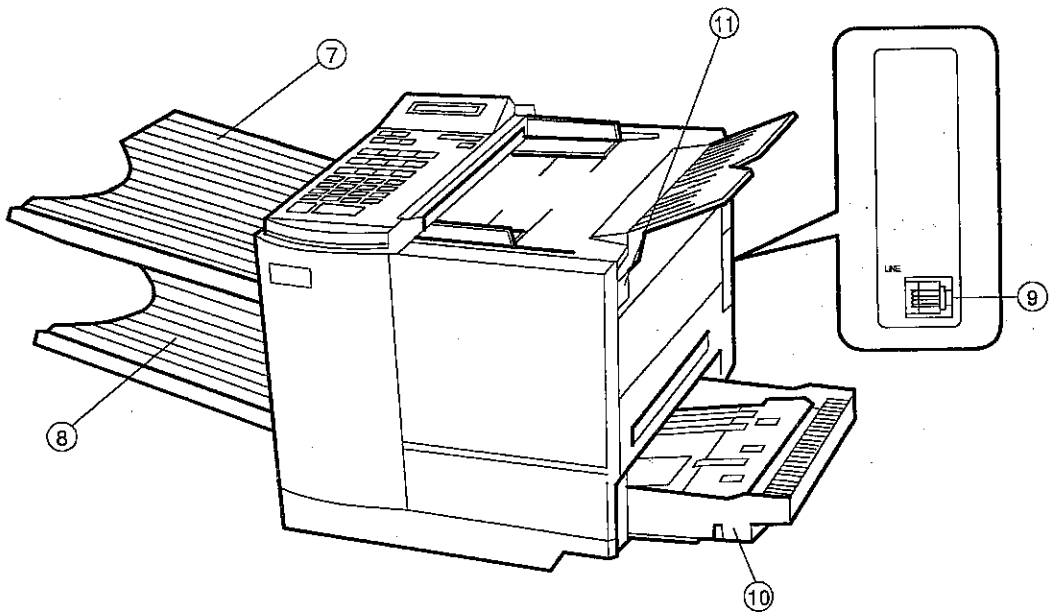
③ **Document Feeder** – Place up to 10 pages to be transmitted or copiedface-down in this area.

④ **Adjustable Document Guide** – Set to the width of the original documents to assure straight feeding through the feeder.

⑤ **Power Switch** – Turns the machine on and off.

⑥ **AC Cord** – Insert the cord plug into an outlet.

(2) SIDE VIEW



⑦ **Original Document Tray** – Used to hold original documents as they exit the machine here.

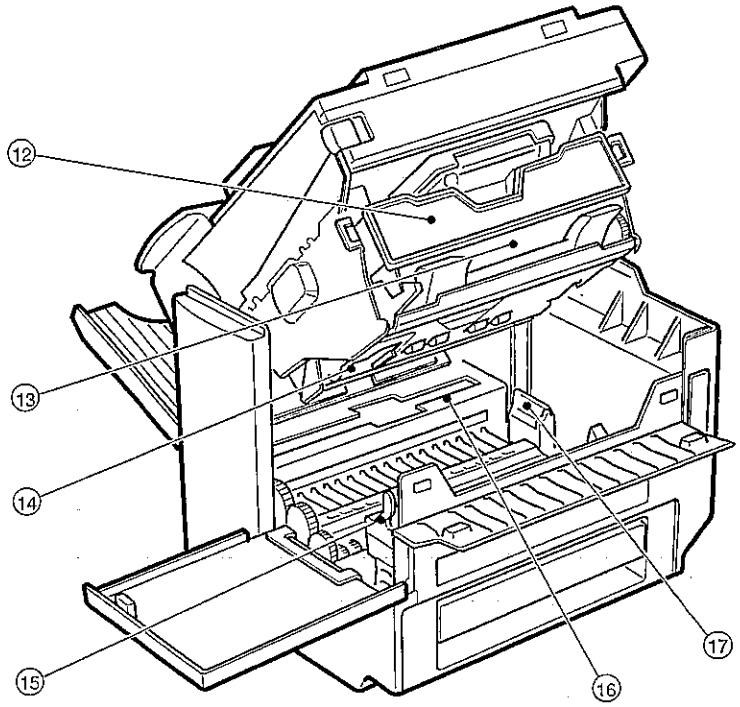
⑧ **Received Document Tray** – Used to hold received documents (copies) as they exit the machine.

⑨ **Line Jack** – Connect the telephone line modular plug to this jack.

⑩ **Paper Cassette** – Used to hold up to 250 sheets of standard weight paper for automatic feeding.

⑪ **Front Cover Release Button**

(3) Inside



⑫ **Toner cartridge** – Used to supply toner.

⑬ **Developer cartridge** – Contains developer.

⑭ **Drum (Photoconductor) cartridge** – Images are formed on this drum.

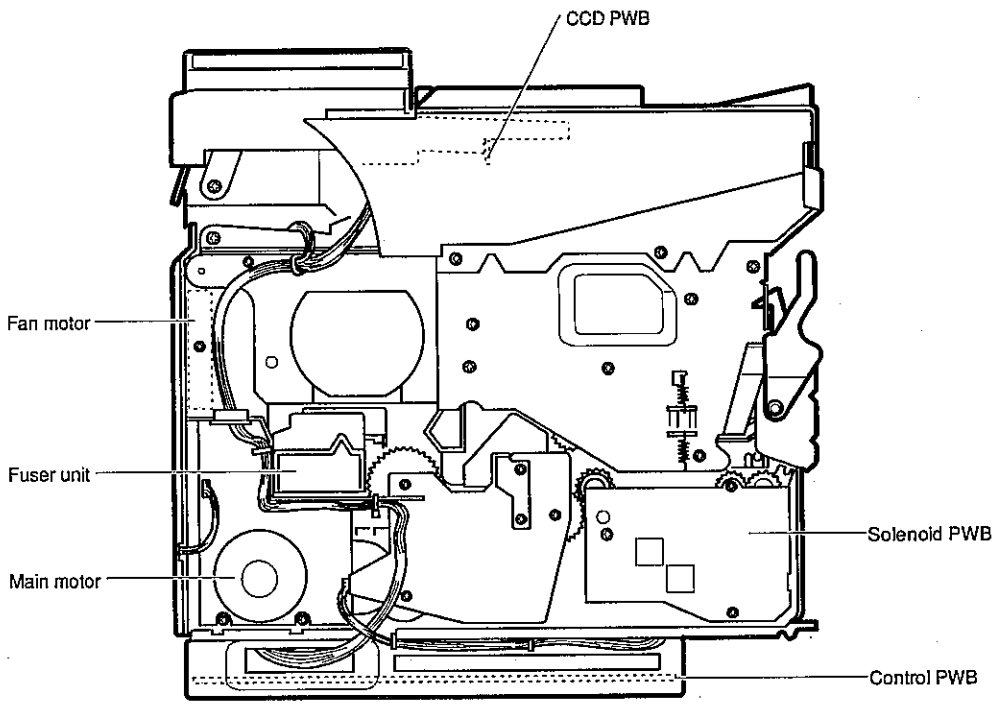
⑮ **Upper half release button** – Used to open the upper unit of the copier.

⑯ **Fusing unit** – Fuses toner on copy paper.

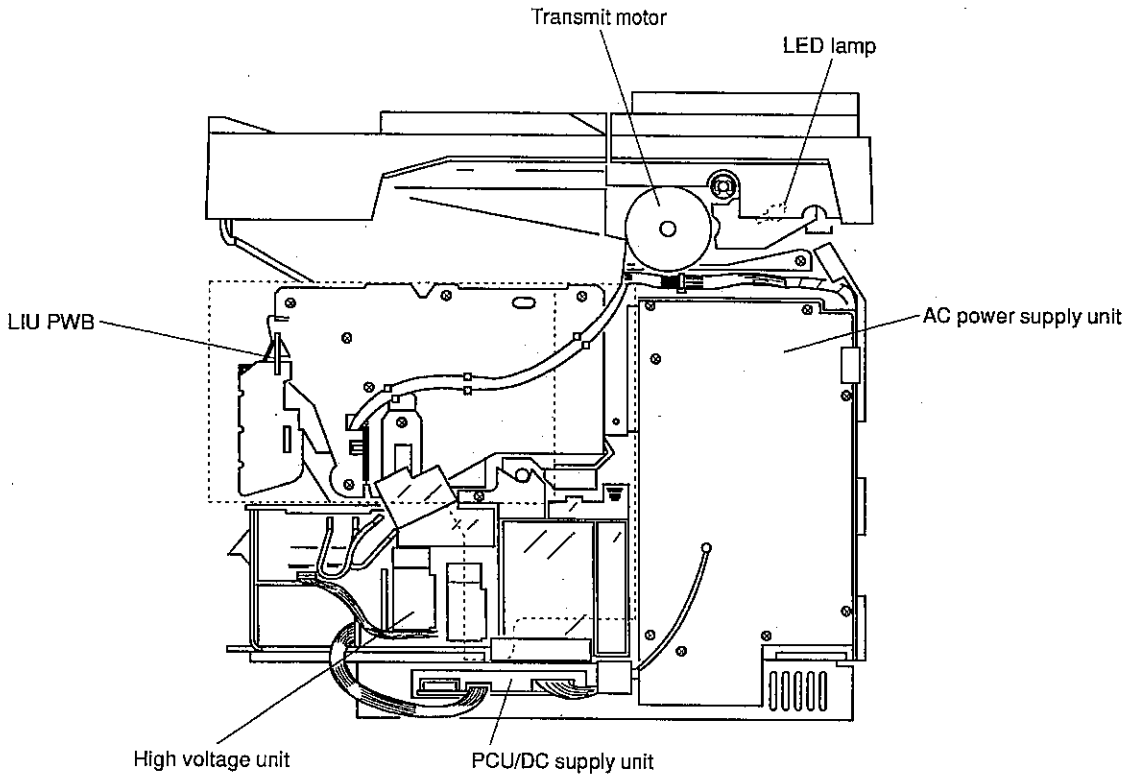
⑰ **Waste toner box (Toner collecting container)** – Used to collect waste toner.

2) INTERNAL STRUCTURE

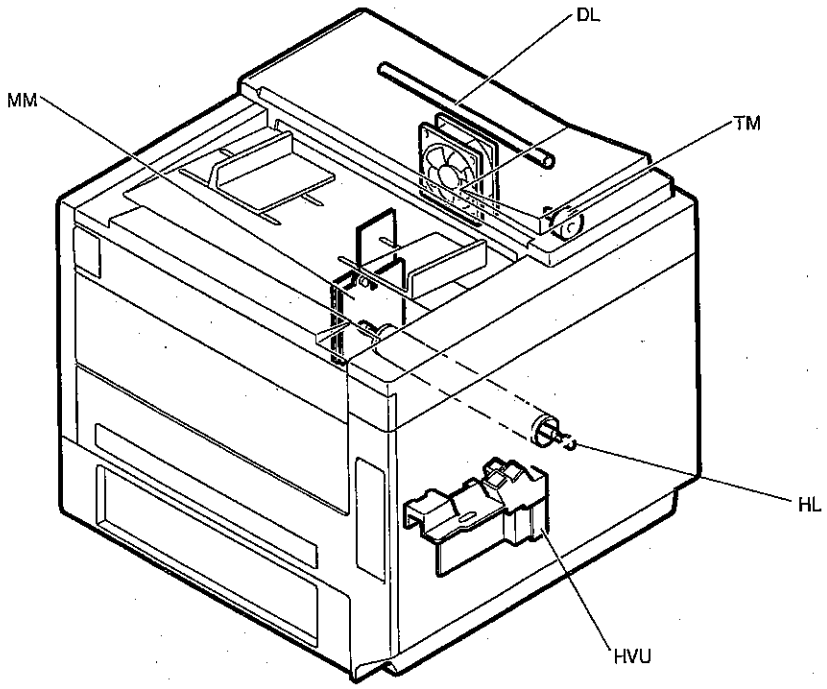
(1) Front side



(2) Rear side

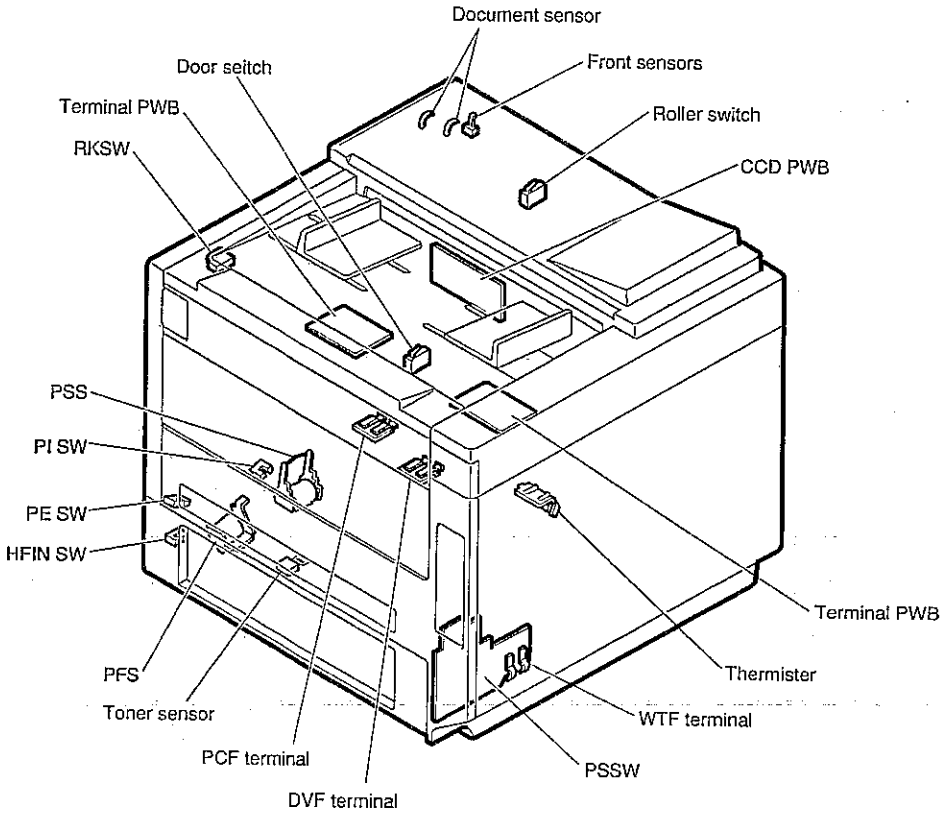


(3) Motor, lamp locations



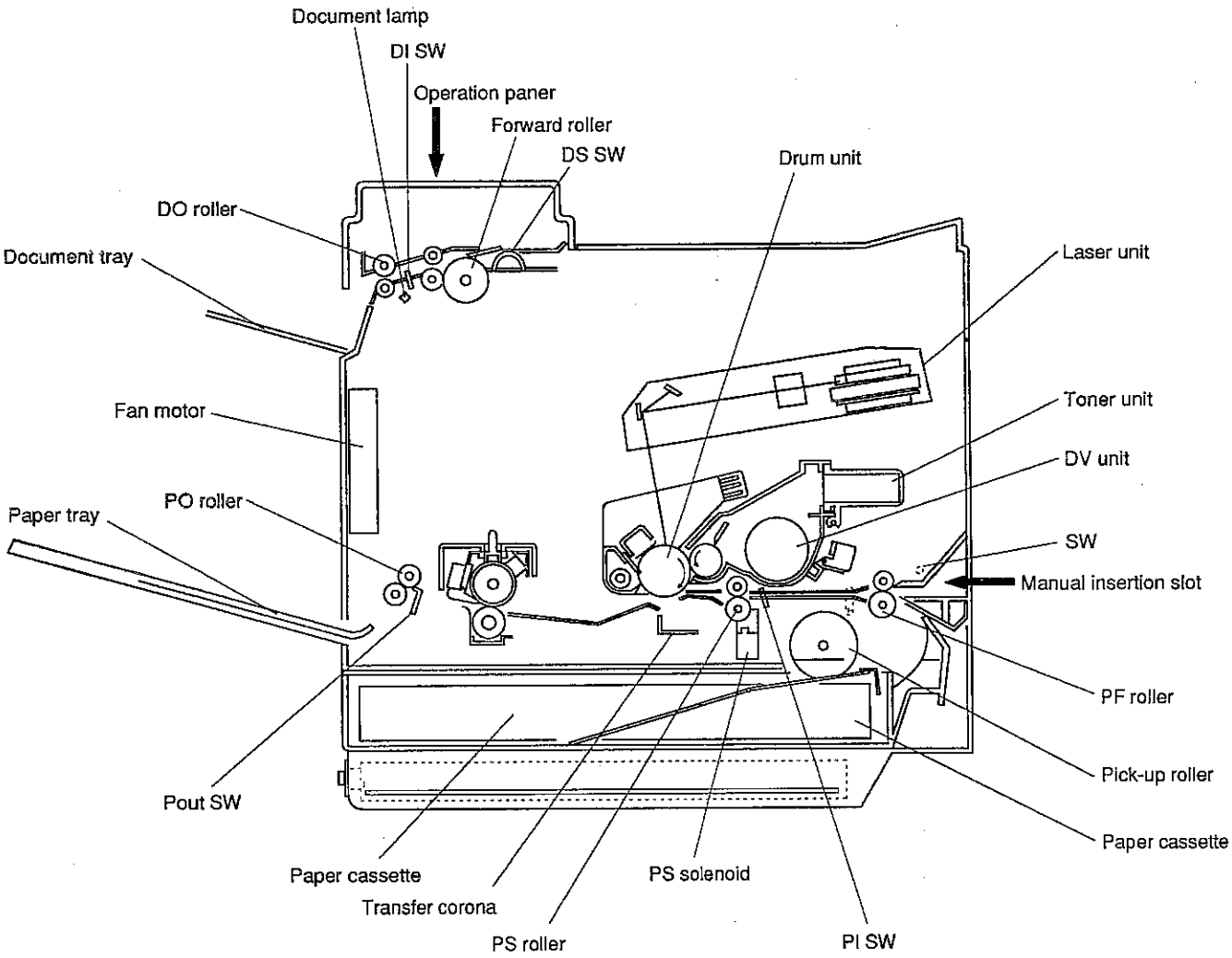
Symbol	Name	Function
MM	Main motor	Load drive motor
HVU	High voltage units	Main corona and transformer corona high voltage supply units
HL	Heater lamp	For heat roller heating
TM	Transmission motor	Feed document
DL	Document lamp	Light document

(4) Switch, sensor, solenoid locations

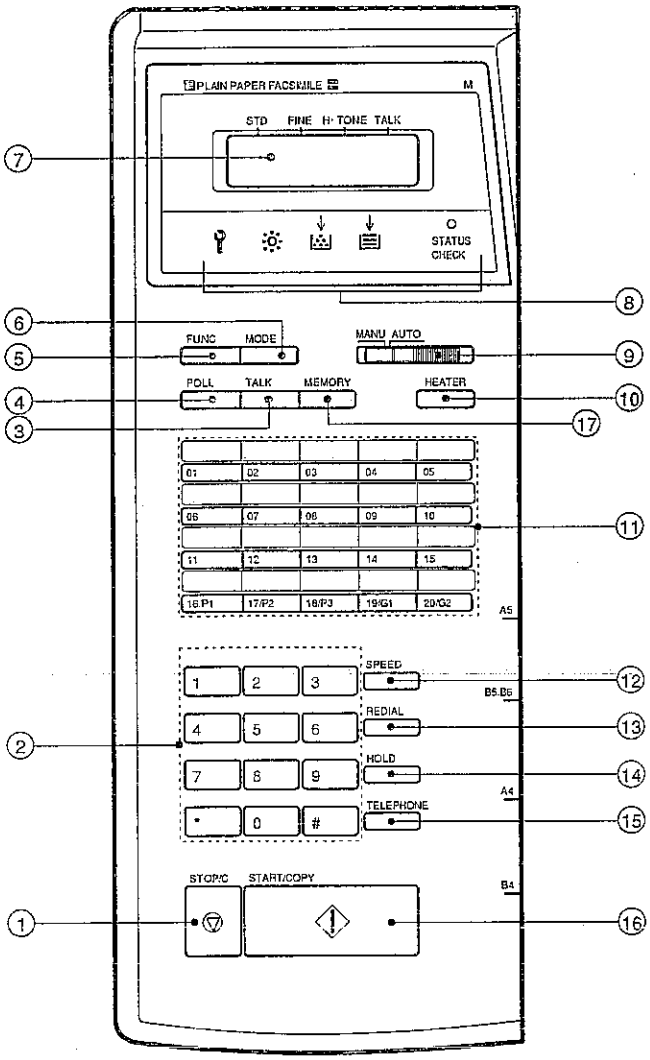


	Name	Type
PISW	Switch	Paper entry sensor
PESW	Switch	Paper empty sensor
PSSW	Switch	Cassette size detection
Toner sensor	Magnetic sensor	Toner concentration sensor
Thermistor	Thermistor	Upper heat roller surface temperature sensor
PFS	Solenoid	Cassette paper feed solenoid
PSS	Solenoid	Paper stop solenoid
PCF terminal	Terminal	Drum cartridge fuse terminal
DVF terminal	Terminal	Developer cartridge fuse terminal
HFIN SW	Switch	Manual paper entry sensor
WTF terminal	Terminal	Waste toner box fuse terminal
RKSW	Microswitch	Upper frame open detect switch
Document sensor	Photo sensor	Document size detection
Front sensor	Photo sensor	Top and Bottom of document detection
Door switch	Switch	Door open detection

(5) Roller


Document lamp
DI SW
Operation paner
Forward roller
DS SW
Drum unit
DO roller
Document tray
Laser unit
Fan motor
Toner unit
DV unit
PO roller
Paper tray
SW
Manual insertion slot
PF roller
Pick-up roller
Pout SW
Paper cassette
Paper cassette
Transfer corona
PS solenoid
PS roller
PI SW

[6] OPERATION PANEL



① **STOP/C key** — This key is used to terminate a transmission, reception, copy operation, other operations and alarms. Also serves as a clear key in programming.

② **Numeric keys (0-9), ✳, #)** — These keys are used to program machine operations (enter times, names, numbers, etc) or to dial a telephone number.

③ **TALK key** — Press this key when you wish to talk with the person on the other end of the line, either before or after a transmission or after a reception. When it is pressed before transmission or after a reception, "TALK REQUEST" appears on the display; during transmission/reception, the arrow mark on the display points to "TALK" to indicate that "talk" has been reserved.

④ **POLL key** — Press this key after dialing if you wish to receive documents from the unattended remote machine which are in its feeder or memory polling area.

⑤ **FUNC key** — This key is first pressed to select various functions such as timer transmission, timer polling, relay broadcasting, confidential transmission, programming function, printing function, various initial setting functions and user switch programming.
When the key is pressed, prompts for available modes (functions) appear on the display.

⑥ **MODE key** — After the document is set in the document feeder, when this key is pressed, "↑" appears on the display; by pressing it repeatedly, "STD" (standard), "FINE" and "H-TONE" (half-tone) can be selected. "CONTRAST: AUTO" or "CONTRAST: DARK" appears in the lower section of the display. Select the desired mode depending on the document.

⑦ **LCD** — Displays, during transmission and reception, the name of the other party with whom you are communicating, their telephone number and the current operating state, and, during programming operation, various messages including information on the next operating step.

⑧ **LED INDICATOR** — Used to alert operator of a problem with the machine or supplies needed.

⑨ **MANU/AUTO switch** — This switch is used to select either the automatic or manual receive mode.

⑩ **HEATER KEY** — This key is used to turn the power of the laser beam printer ON and OFF.
Turn the heater OFF (START/COPY key LED will turn OFF) when not using the unit for long periods of time (for example, at night).

⑪ **Rapid keys (01-15, 16/P1-18/P3, 19/G1, 20/G2, /name labels** — Press one of these keys to dial the telephone number programmed into that rapid key and automatically transmit any documents that are in the feeder or poll that unit.
Rapid keys 16(P1) x 18(P3) work as program keys too. Rapid keys 19(G1) and 20(G2) can serve as Group keys.

⑫ **SPEED key** — For speed dialing, first press this key and then enter the speed number (two digits) with the numeric keys.

⑬ **REDIAL key** — When this key is pressed in the standby state, the last number dialed (by normal dialing, speed dialing, rapid dialing or redialing) can be displayed on the LCD.
If the START/COPY key is then pressed, the number will be automatically redialed to wake a facsimile transmission.

⑭ **HOLD key** — This key is used to enter the telephone number for international dialing or for PBX dialing. HOLD is display as a space.

⑮ **TELEPHONE** — After pick-up the telephone handset and pressing this key, if you press a rapid-dial key or press the SPEED key and entering 2-digit Speed-dial Code, the programmed voice number will be called.

⑯ **START/COPY key** — This key is used to start transmission/reception or copying. Also serves as the entry key.

⑰ **MEMORY key** — This key is used to store documents in memory which can be transmitted to one or more remote units.

Chapter 2. Adjustment

[1] ADJUSTMENT

[A] FACSIMILE BLOCK ADJUSTMENT

1. General description

The following switches are adjustment switches. All switches have been factory set and adjusted. Set the switches according to the users needs and line characteristics. If the settings are OK, there is no need to adjust at installation.

(1) Control board

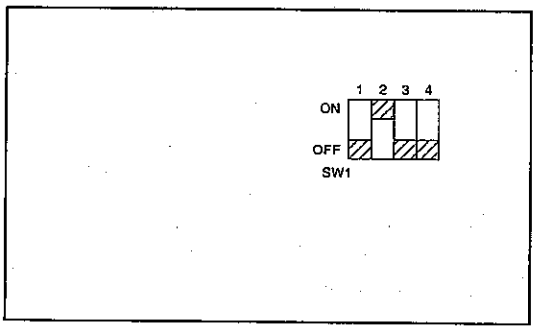
Dip SW1 Mode settings.

(2) Optical unit adjustment (Not field adjustable)

See Chapter 8 (1) Service Tools.

2. Adjustment description

(1) Control board dip SW1



Control board

Fig. 1

Switch No.	Description	ON	OFF	FACTORY SET
1	Memory clear	Memory clear	Normal	OFF
2	Country selection and softswitch enable	Changable	Not changable	ON
3	G3/G2 direct mode	Enable	Disable	OFF
4	CPU WAIT	CPU WAIT	CPU RUN	OFF

Description of SW1 functions

No. 1: Clears the memory when power is turned on with this switch ON. Country select is setting D to Germany, D1 to Italy.

No. 2: Country selection and softswitch enable.

No. 3: Diag G3/G2 direct mode.

No. 4: Halts the CPU. Set ON during manufacturing process and servicing.

Note: The Dip switch is located on the underside of the control board and can be accessed via a self adhesive tab on the bottom of the machine.

[B] PRINTER BLOCK ADJUSTMENTS

1. Pick up roller location adjustment (angle)

Adjustment is required for any of the following reasons:

- When a misfeed occurred in the paper feed block.
- After disassembly or replacement of a component.

[Check procedure]

① Remove the paper feed unit from the printer.

② As shown in Fig. 2, turn the paper feed drive gear in the arrow direction (A) until the clutch sleeve protrusion makes contact with the PF solenoid. Fig. 3 shows the figure when viewed from the solenoid PWB side.

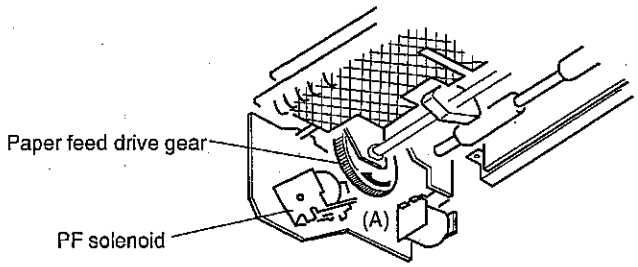


Fig. 2

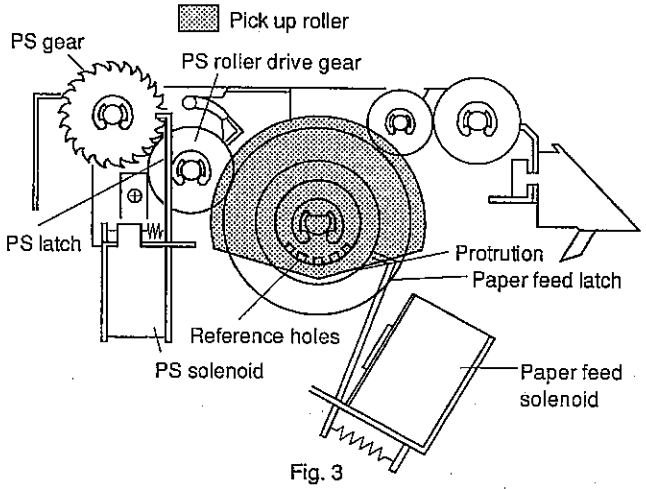


Fig. 3

③ In this state, check the angle formed by the lower surface of the pick-up roller and the plate section (section) to confirm that angle "a" is virtually the same as angle "b" as shown in Fig. 5. (The allowance is +10 degrees, –5 degrees for either of "a" and "b".)

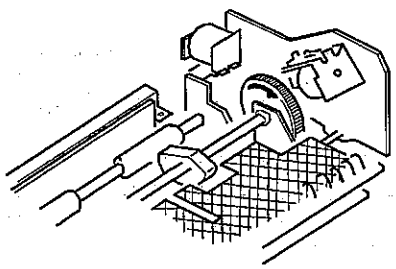
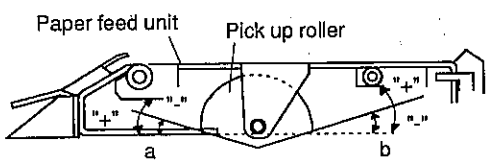


Fig. 4

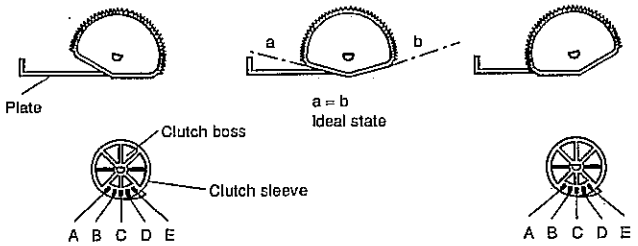
Fig. 5 [Viewed from the side opposite to the solenoid PWB]



④ If the angles are not within the allowable range, perform the folowing adjustment.

a. Check the pick-up roller angle shift according to the above check procedure.

b. As shown in Fig. 6, change the mounting position of the clutch spring according to the angle shift direction.



A – E: Mounting position of clutch spring

Shift the mounting position in direction A.	Shift the mounting position in direction E.

Fig. 6

To change the mounting position of the clutch spring, perform the following procedure.

b-① Remove the solenoid PWB.

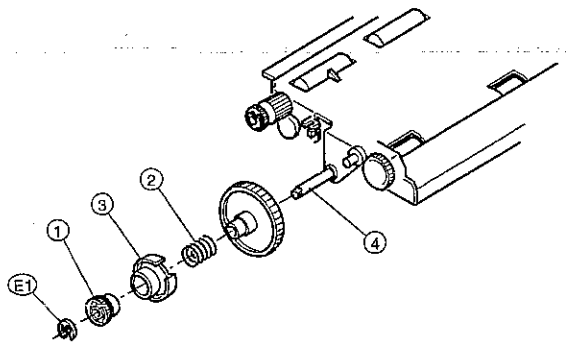


Fig. 7

b-② Remove E-ring (E1).

b-③ Remove clutch boss ①, clutch spring ②, and clutch sleeve ③ from pick-up roller ④.

b-④ Adjust the mounting position of clutch spring ② on clutch boss ①. Insert into pick-up roller ④ again.

b-⑤ Check the angle shift of the pick up roller ④. If it is outside the specified range, readjust the mounting position of clutch spring ②. If it is 0. K., then attach E-ring (E1).

Note: When the clutch is disassembled, apply grease (UKOG-0062FCZZ) to clutch spring ②.

2. Optical system unit assembly position adjustment (See printer diagnostic)

a) Lead edge skew adjustment

If lead edge skew is out of limits 0 to 1mm (within 8 inch length), it has to be adjusted in the following manner:

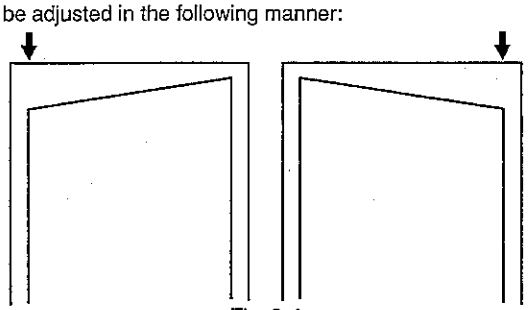


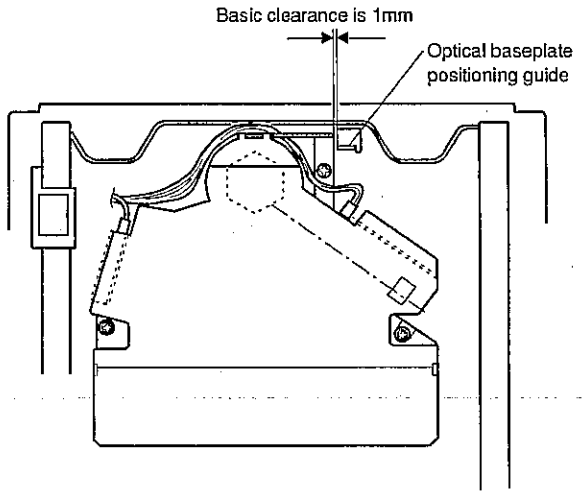
Fig. 9-4

① If printed right side up, increase the clearance between the optical baseplate positioning guide and the optical system case protrusion by 0.5mm. (basic clearance is 1mm)
If printed opposite, decrease the clearance by 0.5mm.

② With the MENU and ENTER key depressed at the same time, turn power on to go into the service engineer diag mode.

③ Depress the MENU key for the TEST PRINT, then push the FORM FEED key.

④ Measure the lead edge print area using the lateral stripe printing to make sure it is within the limits.
If not within the limits, repeat from step ① again.



b) Lead edge adjustment

If the lead edge of the printout is not within the limits (3.1 to 6.1mm), observe the following procedure to adjust it.

① Turn power on while depressing the MENU key with the ENTER key at the same time. Depress the MENU key to pick up the "TOP MARGIN ○○".

② If it was below the limit, push the up-arrow key. The value increments 1/100 inch (0.25mm) each time the key is depressed. Use the down-arrow key, if it was above the limit.

③ Push the FORM FEED switch to obtain the lateral stripe printout and measure the lead edge area. If it is not within the limits yet, push the Δ key or the ∇ key and push the FORM FEED key again. If it was within the limit, turn power off.

c) Left margin adjustment

If the left margin is not within the limits (4.2mm – 2mm to +2mm), observe the following procedure to adjust it.

① Turn power on while depressing the MENU key with the ENTER key at the same time.

② Push the MENU key to pick up. "LEFT MARGIN ○○".

③ If it was below the limit, push the up-arrow key. The value increments 1/100 inch (0.25mm) each time the key is depressed. Use the down-arrow key, if it was above the limit.

④ Push the FORM FEED switch to obtain the lateral stripe printout and measure the margin area. If it was not within the limits yet, push the Δ key or the ∇ key and push the FORM FEED key again. If it was within the limit, turn power off.

[2] Diagnostics

(1) Diagnostic items

This machine have following three diagnostics.

1. Fax diagnostics
   Use for facsimile functions.
2. Print diagnostics
   Use for printing functions.
3. Printer diagnostics

   Note: It can not be controlled from operation panel of facsimile set. It is required to use the service operation tool.

(2) Diagnostic Mode Selection

(A) Fax diagnostics

1. diagnostics description

Pressing the keys in the following sequence selects the fax diagnostics mode and displays the following prompt:

[FUNC] → [9] → [*] → [8] → [#] → [7]

ROM Ver. ○○○○○○○
△△△△△△△, ×××××××

The codes shown are the ROM version number:

○○○○○○○ : 2Mbit ROM for main control

△△△△△△△ : 1Mbitkbit ROM for main control

××××××× : 256kbit ROM for sub control

Press the START/COPY key. Country name will be appear on the display period of 2 second.
Select the desired item by pressing the "*" or "#" key (or by directly entering the number on the rapid dial keypad). Press the START/COPY key to go into the selected diagnostic mode.

2. Diagnostic items

01 SOFT SWITCH MODE
02 PRINT AREA
03 ROM & RAM CHECK
04 AUTO FEEDER MODE
05 AGING MODE
06 PANEL CHECK MODE
07 OPTICAL SYSTEM ADJUSTMENT MODE
08 PRODUCT CHECK (diags, 06, 03 and 02 take place in succession)
09 SIGNAL SEND MODE
10 COM. CHECK MODE
11 MEMORY CLEAR
12 G2 TRANSMISSION
13 G3 DIRECT MODE
14 MESSAGE CHECK
15 COUNTRY SELECT

3. Description of diagnostic items

01 SOFT SWITCH MODE

Used to change or check the soft switch settings.
(When the Dip SW1-2 on the control board is set to "ON".)
Printout follows setting.

02 PRINT AREA

Prints the effective print area according to the specified paper size.
Same as print diagnostics No.1.

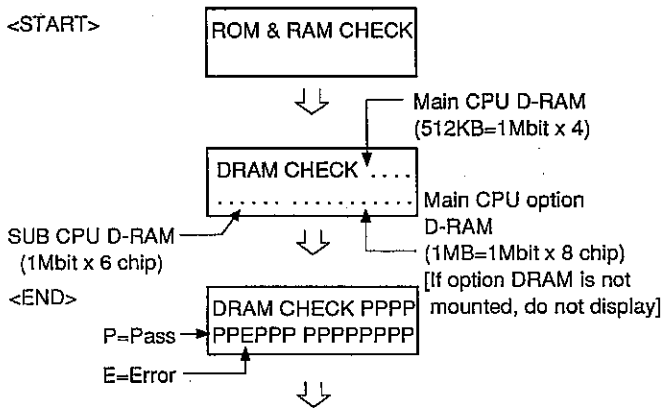
03 ROM & RAM CHECK

Used to do the ROM sum check and the RAM read/write test and to clear the RAM.

The test results will be given by means of beeps.

No beep means "all checked successful". A short beep or beeps mean an IC in error, with the number of beeps indicating which IC failed. The test results will also be printed.

Number of beeps	Error IC	Board
1 beeps	ROM1 (IC14)	Control PWB
2 beeps	ROM2 (IC11)	
3 beeps	ROM3 (IC1)	
4 beeps	S-RAM (IC21)	
5 beeps	D-RAM (IC5, 6, 7, 8, 9, 10, 27, 28, 29, 30)	



<RESULT PRINT>

```
*********************************************************************
*                                                                   *
*          ROM/RAM CHECK TABLE                                      *
*          ROM1 = OK                                                *
*          ROM2 = OK                                                *
*          ROM3 = OK                          SUB-CPU    Main CPU   *
*          SRAM = OK                                                *
*          DRAM = NG  MAIN :IC06,IC05,IC08,IC07,IC10,IC09,IC28,IC27,IC30,IC29 *
*                     Option:IC08,IC07,IC10,IC09,IC02,IC01,IC04,IC03 *
*          SIZE = 1.5MB (With Option DRAM)                          *
*                                                                   *
*********************************************************************
```

If option D-RAM is not mounted, the size is 512KB

[ROM/RAM Location] <FO-5300>

Main CPU	ROM-1	IC14	2M bit
	ROM-2	IC11	1M bit
	S-RAM	IC21	256K bit
	D-RAM-1	IC30	USB 4 bit
		IC28	LSB 4 bit
	D-RAM-2	IC29	USB 4 bit
		IC27	LSB 4 bit
Sub CPU	ROM-3	IC1	256K bit
	D-RAM-3	IC10	USB 4 bit
		IC7	LSB 4 bit
	D-RAM-4	IC9	USB 4 bit
		IC6	LSB 4 bit
	D-RAM-5	IC8	USB 4 bit
		IC5	LSB 4 bit

04 AUTO FEEDER MODE

Used to check auto feed function by inserting and ejecting documents. Place documents in the hopper after entering this mode, then press the START/COPY key to start the test. As the document sensor is actuated, "A4" or "B4" will be displayed according to the size of the document.

05 AGING MODE

If a document is placed in the hopper, a copy is taken first. If no document, a sheet of test patterns is printed out every 60 minutes. (total 10 sheets)

06 PANEL CHECK MODE

Used to check proper key operation. Key entry is displayed on the LCD. The test results will also be printed.
(However, Max 64 items for printing)

07 OPTICAL SYSTEM ADJUSTMENT MODE

There are two modes according to presence of original document.

1) Without document: print area

2) With document: optical system adjustment mode

In normal copy mode, CPU wait/run is allowed with key operation.

① STOP key: Goes into run state.

② START/COPY key: Goes into run state.

When STOP key is pressed twice continuously, the mode is shifted to the diagnostic standby mode.

08 PRODUCT CHECK (diags, 06, 03 and 02 take place in succession) Used to carry out the PANEL CHECK MODE, ROM & RAM CHECK and CHECK PATTERN successively.

09 SIGNAL SEND MODE

Pressing the START/COPY key after entering this mode will transmit the signals in the following order. Used to test the modem.

1	9600 bps	13	G2PHS
2	7200 bps	14	ALL BLACK (G2)
3	4800 bps	15	ALL WHITE (G2)
4	2400 bps	16	4 LINE/mm (G2)
5	300 bps (FLAG)	17	DTMF single tone 697Hz
6	2100Hz	18	DTMF single tone 770Hz
7	462Hz	19	DTMF single tone 852Hz
8	1080Hz	20	DTMF single tone 941Hz
9	1500Hz	21	DTMF single tone 1209Hz
10	1650Hz	22	DTMF single tone 1336Hz
11	1850Hz	23	DTMF single tone 1477Hz
12	2100Hz		

10 COM. CHECK MODE

A diagnostic item used in manufacturing process. (Factory use only)

11 MEMORY CLEAR

Used to clear the memory. Memory can also be cleared by using soft switch. The results will be printed.

12 G2 TRANSMISSION

Used to test G2 transmission with the handset hung up. Direct connect two machines with the phone cable. Set a document in either or both machines, and press the START/COPY key to start communication. The Dip SW1-3 must be "ON".

13 G3 DIRECT MODE

Used to do direct connect G3 transmission with the handset hung up. Direct connect two machines with the phone cable. Set a document in either or both machines, and press the START/COPY key to start communication. The DIP SW 1-3 must be "ON".

14 MESSAGE CHECK

Used to translate each country lang.

15 COUNTRY SELECT

Used to set Telephone line paramater on RAM to conform to the Telephone line of each country.
Select the country by pressing the "✱" or "#" key, then press the START/COPY key. The memory clear must be do.
The DIP SW 1-2 must be "ON".

4. Description of the soft switches

4-1. Soft switch setup

Soft switch settings stored in memory can be changed by entering data from the keyboard. SW1 through SW10 constitutes soft switches. See the soft switch listing on page 2-5 and 2-6 for the function of SW10 through SW8 settings.

(Adjustment may not be required if the machine works properly with factory settings.)

How to make soft switch settings

To enter the softswitch mode, make the following key entries in sequence:

"FUNC", "9", "✱", "8", "#", "7", "START/COPY", "START/COPY"

SW1 data No.1 through No.8 will be displayed.

	Data No.	1	2	3	4	5	6	7	8
Display	SW1 =	0	0	0	0	0	0	0	0

Press the "#" or "✱" key and bring the cursor (blinking pointer) to the data No. which is to be changed. (The "#" key moves the cursor to the right, and the "✱" key to the left.)

Press the FUNCTION key to change the setting between 1 and 0. When the cursor is on data No.8 position, press the "#" key to display SW2 data No.1 through No.8. Pressing the START/COPY button shifts the cursor to the next soft switch.

	Data No.	1	2	3	4	5	6	7	8
Display	SW2 =	0	0	0	0	1	0	1	0

Make settings in the same way as for SW1. Proceed to the settings of SW3 to SW10 in the same manner.

When the cursor is on SW10 data No.8 position as shown below, press the "#" key to finalize all settings.

	Data No.	1	2	3	4	5	6	7	8
Display	SW10 =	0	0	0	0	1	0	0	0

To finish the settings halfway between SW1 and SW10, press the STOP key. In this case, the setting being done to the SW No. on display will be nullified while the settings done to the preceding SW Nos. remain in effect.

SOFT SWITCH LIST

SW No.	DATA No.	Item	Switch setting and function					Country setting												Note
			1				0	DE	CH	AT	IT	ES	PT	BE	SE	NO	FI	DK	NL	
SW1	1	Line density choice	Fine				Standard	0	0	0	0	0	0	0	0	0	0	0	0	
	2	Number of ring for auto receive	5 rings				As is PTT	0	0	0	0	0	0	0	0	0	0	0	0	See NOTE 1
	3	Date format	Month-Day-Year				Day-Month-Year	0	0	0	0	0	0	0	0	0	0	0	0	
	4	Automatic printout of activity report	Yes (When memory is full)				No (First data lost when memory is full)	0	0	0	0	0	0	0	0	0	0	0	0	
	5	ECM mode	No				Yes	0	0	0	0	0	0	0	0	0	0	0	0	
	6	Reserved						0	0	0	0	0	0	0	0	0	0	0	0	
	7	Automatic switching from manual to auto receive	Switch to auto receive mode after 5 rings				Normal (Does not switch)	0	0	0	0	0	0	0	0	0	0	0	0	
	8	Reserved						0	0	0	0	0	0	0	0	0	0	0	0	
SW2	1	Telephone type	DTMF				Dial pulse	0	0	0	0	0	0	0	0	0	1	0	0	
	2	Reception 4800PBS fixed	Yes				No	0	0	0	0	0	0	0	0	0	0	0	0	
	3	Reserved						0	0	0	0	0	0	0	0	0	0	0	0	
	4	CED tone signal interval	500msec				75msec	0	0	0	0	0	0	0	0	0	0	0	0	
	5 6	Line equalizer		0Km	1.8Km	3.6Km	7.2Km													
			No.5	0	0	1	1	0	0	1	1	1	1	0	1	1	1	1	1	
			No.6	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
	7 8	Modem speed		9600BPS	7200BPS	4800BPS	2400BPS													
			No.7	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	
			No.8	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
SW3	1	Max. page length for transmit, receive and copy	No limit				1m max. for copy and transmit, 1.5m max. for receive	0	0	0	0	0	0	0	0	0	0	0	0	

NOTE 1: Number of ring for auto receive

Switch setting	Country											
	DE	CH	AT	IT	ES	PT	BE	SE	NO	FI	DK	NL
1	5	5	5	5	5	5	5	5	5	5	5	1
0	1	2	1	1	2	1	2	1	1	1	1	1

SW No.	DATA No.	Item	Switch setting and function		Country setting												Note
			1	0	DE	CH	AT	IT	ES	PT	BE	SE	NO	FI	DK	NL	
SW3	2	Footer print	Yes	No	0	0	0	0	0	0	0	0	0	0	0	0	
	3	Sender's phone number registration	Cannot be changed	Can be changed	0	0	0	0	0	0	0	0	0	0	0	0	
	4	Total time, total pages printed in activity report	No	Yes	0	0	0	0	0	0	0	0	0	0	0	0	
	5	Substitute reception	No	Yes	0	0	0	0	0	0	0	0	0	0	0	0	
	6	Substitute reception without CSI	Disable	Enable	0	0	0	0	0	0	0	0	0	0	0	0	
	7	CSI transmission	Not transmitted	Transmitted	0	0	0	0	0	0	0	0	0	0	0	0	
	8	Communication error treatment (reception) in RTN sending	Not transmission error	Transmission error	0	0	0	0	0	0	0	0	0	0	0	0	
SW4	1	Reserved			0	0	0	0	0	0	0	0	0	0	0	0	
	2	Dialing pause	4 seconds	2 seconds	0	0	0	1	0	0	0	0	0	0	0	0	
	3	Error criterion	10~20%	5~10%	0	0	0	0	0	0	0	0	0	0	0	0	
	4	NSF receive acknowledge in G3 transmit mode	2	1 for NSF reception, 2 for DIS reception	0	0	0	0	0	0	0	0	0	0	0	0	Valid for international transmission
	5	Non-modulation carrier in V29 transmission mode	Yes	No	0	0	0	0	0	0	0	0	0	0	0	0	Valid for international transmission
	6	EOL detect timer	25 seconds	5 seconds	0	0	0	0	0	0	0	0	0	0	0	0	
	7	Sender's information	No	Yes	0	0	0	0	0	0	0	0	0	0	0	0	
	8	Waiting time after dialing	90 seconds	As is PTT	0	0	0	0	0	0	0	0	0	0	0	0	See NOTE 2
SW5	1 2	Density adjustment in fine/standard mode		Standard / Light / Dark / Darker													
			No.1	0 / 0 / 1 / 1	0	0	0	0	0	0	0	0	0	0	0	0	
			No.2	0 / 1 / 0 / 1	0	0	0	0	0	0	0	0	0	0	0	0	
	3 4	Density adjustment in halftone mode		Standard / Light / Dark / Darker													
			No.1	0 / 0 / 1 / 1	0	0	0	0	0	0	0	0	0	0	0	0	
			No.2	0 / 1 / 0 / 1	0	0	0	0	0	0	0	0	0	0	0	0	
	5	Character detection sensitivity setting in halftone mode	Strong	Weak	0	0	0	0	0	0	0	0	0	0	0	0	
	6	MTF correction in half-tone mode	No	Yes	0	0	0	0	0	0	0	0	0	0	0	0	
	7	Image area separation process in half-tone mode	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	
	8	Smoothing process in fine/standard mode	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	

NOTE: Waiting time after dialing

Switch setting	Country											
	DE	CH	AT	IT	ES	PT	BE	SE	NO	FI	DK	NL
1	90	90	90	90	90	90	90	90	90	90	90	90
0	45	90	45	45	45	45	45	45	45	45	45	45

SW No.	DATA No.	Item	Switch setting and function					Country setting												Note
			1				0	DE	CH	AT	IT	ES	PT	BE	SE	NO	FI	DK	NL	
SW6	1	Auto cover sheet	No				Yes	1	1	1	1	1	1	1	1	1	1	1	1	
	2 3	Communication results print out (Transaction report)		Timer trans-mission or communi-cation error	Only TX	Prints every time	Not printed													D Ver.: Does not work Not printed. in user switch
			No.2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	
			No.3	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
	4	Lower frequency of CI detection, no dial detect	Over 13Hz no detection				As is PTT	0	0	0	0	0	0	0	0	0	0	0	0	See NOTE 3
	5	Earth key selection	Earth key				PBX ID Digit	0	0	0	0	0	0	0	0	0	0	0	0	
	6	Reserved						0	0	0	0	0	0	0	0	0	0	0	0	
	7	Protocol monitor	Yes				No	0	0	0	0	0	0	0	0	0	0	0	0	
	8	Line monitor	Yes				No	0	0	0	0	0	0	0	0	0	0	0	0	
SW7	1	Reserved						0	0	0	0	0	0	0	0	0	0	0	0	
	2	ECM MMH mode	OFF				ON	0	0	0	0	0	0	0	0	0	0	0	0	
	3	Dial pulse for Norway	10-N				N	0	0	0	0	0	0	0	0	0	0	0	0	
	4	Reserved						0	0	0	0	0	0	0	0	0	0	0	0	

NOTE 3: CI detect frequency for each countries as follows.

Country	DE	CH	AT	IT	ES	PT	BE	SE	NO	FI	DK	NL
Initial Set	20 | 58	←	←	≧ 14	←	←	20 | 58	←	←	←	←	←

SW No.	DATA No.	Item	Switch setting and function		Country setting												Note
			1	0	DE	CH	AT	IT	ES	PT	BE	SE	NO	FI	DK	NL	
SW7	5	Signal transmission level	Binary input		0	0	0	0	0	0	0	1	1	1	1	1	
	6		8 4 2 1		1	1	1	1	1	1	1	0	0	0	0	0	
	7		No.= 5 6 7 8 (Data No.)		1	1	1	1	1	1	0	1	1	1	1	1	
	8		Transmission level (dBm) = Binary value – 2		0	0	0	0	0	0	1	0	0	0	0	0	
SW8	1	Memory input mode	1:1	Reduce	0	0	0	0	0	0	0	0	0	0	0	0	
	2	Cut off mode (In copy mode)	Continue	Cut off	0	0	0	0	0	0	0	0	0	0	0	0	
	3	Reduce rate (In A4 receive)	87%	94%	0	0	0	0	0	0	0	0	0	0	0	0	
	4	Line echo countermeasure	Yes	No	0	0	0	0	0	0	0	0	0	0	0	0	
	5	H2 mode	OFF	ON	0	0	0	0	0	0	0	0	0	0	0	0	
	6	Reduction at copy mode	1:1	Reduce	0	0	0	0	0	0	0	0	0	0	0	0	
	7	Reserved			0	0	0	0	0	0	0	0	0	0	0	0	
	8	RMS (Remote Maintenance System) function	Yes	No	0	0	0	0	0	0	0	0	0	0	0	0	
SW9	1	Recall interval	Binary input		0	0	0	0	0	0	0	0	0	0	0	0	2.5 min fixed
	2	(Not used)	8 4 2 1		0	0	0	0	0	0	0	0	0	0	0	0	
	3		No.= 1 2 3 4 (Data No.)		0	0	0	0	0	0	0	0	0	0	0	0	
	4				0	0	0	0	0	0	0	0	0	0	0	0	
	5	Recall time	Binary input		0	0	0	0	0	0	0	0	0	0	0	0	
	6		8 4 2 1		0	0	0	0	0	0	0	0	0	0	0	0	
	7		No.= 5 6 7 8 (Data No.)		1	1	0	1	1	1	1	1	1	1	1	1	
	8				0	0	1	0	0	0	0	0	0	0	0	0	
SW10	1	Reserved			0	0	0	0	0	0	0	0	0	0	0	0	
	2	PBX/PSTN selection	PBX	PSTN	0	0	0	0	0	0	0	0	0	0	0	0	
	3	Reserved			0	0	0	0	0	0	0	0	0	0	0	0	
	4	Reserved			0	0	0	0	0	0	0	0	0	0	0	0	
	5	Reserved			0	0	0	0	0	0	0	0	0	0	0	0	
	6	Reserved			0	0	0	0	0	0	0	0	0	0	0	0	
	7	ECM mode choice	No	Yes	0	0	0	0	0	0	0	0	0	0	0	0	(For reception)
	8	Reserved			0	0	0	0	0	0	0	0	0	0	0	0	

4-2. Soft switch functional description

SW1 No.1 Line density choice
Used to set the transmission mode which is automatically selected when the MODE key is not pressed. In the copy mode, however, the fine mode is automatically selected unless the MODE key is manually set to another mode.

SW1 No.2 Number of ring to start auto receive
This soft switch is used to set the number of rings to start auto receive to 1 (2) or 5 rings. In either setting, the machine can be used as an ordinary telephone if the handset is picked up before entering the fax mode (while the telephone is ringing). It is suggested to set the soft switch to "0" (1 ring) for the fax dedicated line and to "1" (5 rings) for line used for both fax and telephone. If the fax answerback tone is heard when the handset is picked up, press the START/COPY key.

SW1 No.3 Date format
Used to set entry of date into activity report and LED display format according to specifications of country.

SW1 No.4 Automatic printing of activity report
This soft switch is used to select; whether or not to produce the activity report when the memory is full (about 50 items). An activity report can be produced when the following key entry command is made.

"FUNC", "2", "#", "START/COPY"

After producing the activity report, all the data in the memory will be cleared.

When the switch function is set to "0" (NO), the data in the memory will be deleted from the oldest as it reaches the maximum memory capacity (approx. 50 items).

SW1 No.5 ECM mode
Used to determine ECM mode function.
When this switch is set to "1," transmission is performed without using the ECM function. Normally set to "0."

SW1 No.6 Reserved
Set to "0."

SW1 No.7 Automatic switching from manual to auto receive mode
This soft switch is used to select whether the machine should switch to the auto receive mode after 6 rings in the manual receive mode or remain in the manual mode. When the soft switch is set to "1", the machine operates in the same way as the SW1 No.2 is set to "1" (6 rings).

SW1 No.8 Reserved
Set to "0".

SW2 No.1 Telephone type
Set according to the connected telephone line type. Set to "0" for for Pulse (Rotary) type, and set to "1" for DTMF (Tone) type. If this setting is improper, communication cannot be made.

SW2 No.2 Forced 4800 BPS receive
When line conditions warrant that the receiption take place at 4800 BPS repeatedly. It may improve the success of receiption by starting at 4800 BPS. This improves the receiving document quality and the handshake time due to fallback during training.

SW2 No.3 Reserved
Set to "0".

SW2 No.4 CED tone-signal interval
For international communication, the 2100Hz CED tone may act as an echo suppresser switch, causing a communication problem. Though this soft switch is normally set to "0", it should be set to "1" so as to change the timer between CED tone and DIS signal from 75ms to 500ms to eliminate the communication problem caused by echo.

SW2 No.5, No.6 Line equalizer setting
Line equalizer is to be set according to the line characteristics. Setting should be made according to the distance between the telephone and the telephone company central switching station. The switch is factory set to the distance of 2.25 miles (3.6km) which may not have to be changed for a normal installation. If errors frequently occur, the setting should be changed accordingly.

SW2 No.7, No.8 Modem speed
Used to determine the initial modem speed. The default is 9600bps. It may be necessary to program it to a slower speed when frequent line fallback is encountered, in order to save the time required for fallback procedure.

SW3 No.1 Maximum copy, transmit, receive page length
Used to set the maximum page length.

To avoid possible paper jam, the page length is normally limited to 1 meter for copy or transmit, and 1.5 meters for receive.

It is possible to set it to "No limit" to transmit a long document, such as a computer print form, etc. (In this case, the receiver must also be set to no limit.)

SW3 No.2 Footer print
When set to "1", the date of reception, the sender machine No., and the page No. are automatically recorded at the end of reception.

SW3 No.3 Sender's phone number registration
Used to make a choice of whether the registered sender's phone number can be changed or not. If the switch is set to "1", new registration of the sender's phone number is disabled to prevent accidental wrong input.

SW3 No.4 Total time, total page number on activity report
Used to make a choice of whether the total communication time and pages are recorded in the activity report.

SW3 No.5 Substitute reception
Selection of substitution receive in case of recording paper exhaust or paper jamming. If set to "NO", auto receive is disabled even when the receive memory is ready to receive.

Substitute reception is not performed even during receive operation.

SW3 No.6 Substitute reception without CSI
Selection of substitute reception according to existence of send TEL number in sending side. Initial setting allows substitute reception without CSI. In this case, when memory is deleted by service interruption, the receiver cannot receive any prints.

SW3 No.7 CSI transmission
CSI signal contains the sender's phone number registered in the machine. If this switch is set to "1", no sender's name will be printed at the receiving side.

SW3 No.8 Communication error treatment (reception) in RTN sending and reception
Used to determine communication error treatment when RTN is sent by the occurrence of received image errors in G3 reception. When it is set to "1", communication error is judged as no error.

SW4 No.1 Reserved
Set to "0".

SW4 No.2 Dialing pause
Pause can be inserted between telephone numbers of direct dial contraction. Selection of 4 sec or 2 sec pause is available.

SW4 No.3 Error criterion
Used to select error criterion for sending back RTN when receiving image data.

SW4 No.4 NSF receive acknowledgment during G3 transmission
Used to make a choice of whether reception of NSF (DIS) is acknowledged after receiving two NSFs (DISs) or receiving one DIS (two NSFs).

It may be useful for overseas communication to avoid an echo suppresser problem, if set to 1.

SW4 No.5 Non-modulation carrier detection for V29 modem
Though transmission of non-modulated carrier is not required for transmission by the V29 modem according to the CCITT Recommendation, it may be permitted to send non-modulation carrier before the image signal to avoid an echo suppresser problem.

It may be useful for overseas communication to avoid an echo suppresser problem, if set to 1.

SW4 No.6 EOL detect timer
Used to make a choice of whether to use the 25-second or 5-second timer for detection of EOL.
This is effective to override communication failure with some facsimile models that have longer EOL detection.

SW4 No.7 Sender's information
Used to make a choice of whether the registered sender's phone number can be changed or not. If the switch is set to "1", new registration of the sender's phone number is disabled to prevent accidental incorrect input.

SW4 No.8 Waiting time after dialing
This is the time waiting for the opponent's signals after dialling. For the Switzerland version, the time is fixed to 90 sec regardless of this switch setting.

SW5 No.1 No.2: Density adjustment in fine/standard mode
This is used for density adjustment in fine/standard mode. Adjust the density according to that of frequently used original.

Set to "Dark" for darker reading (either in the auto or the dark mode) of light original.

Set to "Light" for lighter reading (either in the auto or the dark mode) of dark original.

Set to "Dark only in dark mode" for darker reading only in the dark mode.

SW5 No.3 No.4: Density adjustment in half tone mode
This is used for density adjustment in the half tone. Setting procedures are the same as SW5 No. 1, No. 2.

SW5 No.5: Character detection sensitivity setting in half tone mode
In the half tone mode, image area is separated from character area and processed separately to eliminate unclear character transmission. This switch is used to change the criteria of judgement of separation. When "Strong" (= 1) is selected, more area is judged as character area, providing clearer characters.

On the contrary, however, edges of image area may be emphasized.

It is advisable to restrict the use of this function only when clear characters must be transmitted, and to use the function of "Weak" (= 0) for general cases.

SW5 No.6: MTF correction in half tone mode
This allows selection of MTF correction (dimness correction) in the half tone mode. When "NO" (= 1) is selected, the whole image becomes soft and mild. On the contrary, however, clearness of characters will be reduced. Normally set to "YES" (= 0).

SW5 No.7: Image area separation process in half tone mode
This allows selection of image area separation process in the half tone mode. When "NO" (= 0) is selected, image area separation is not performed and all area is processed as image area, eliminating edge effect and providing smooth image. On the contrary, however, characters will be unclear. Normally set in "YES" (= 1).

SW5 No.8: Smoothing process in fine/standard mode
This allows selection of smoothing process of transmitted image in the fine/standard mode.

When "NO" (= 0) is selected, smoothing process is not performed and the resolution power of extremely small characters will be increased. On the contrary, however, over all page will be less distinct. It is advisable to restrict the use of this function for frequent transmission of minute characters and set normally to "YES" (= 1).

SW6 No.1 Auto-cover sheet
When "1" (=YES) is selected, the cover sheet is automatically sent after transmission of the original to notify the receiver of the number of original sheets transmitted.

SW6 No.2, No.3 Communication results printout (Transaction report)
It is possible to obtain communication result after each transaction. Normally, the switch is set (No.2: 0, No.3: 0) so that the communication result is produced only after a timer transmission or when a communication error is encountered. If No.2 was set to 1 and No.3 to 0, the communication result will be produced every time a communication is done, even if the communication was successful.

If No.2 was set to 0 and No.3 to 1, the communication result will be produced every transmittion.

Setting No.2 to 1 and No.3 to 1 will disable this function. No transaction report printed.

SW6 No.4 Lower frequency of CI detection, no dial detect
Used to set the lower limit of CI (Calling Indication) signal detecting frequency and to set dial tone detection YES/NO.
When set to "0", the lower limit of CI signal detecting frequency is for PTT. In this case only signals of PTT specifications or more are detected.
In addition, dial tone is checked on dialling. When set to "1", CI signals of 13Hz to 76Hz are detected and dial tone is not checked.

SW6 No.5 Earth key selection
Used to select recall method according to exchanger type.
Set to "0" for recall by figure, and to "1" for earth recall.

SW6 No.6 Reserved
Set to "0."

SW6 No.7 Protocol monitor
It is possible to obtain protocol after each communication.
Normally, the switch is set "0" so that the protocol is not produced.
When communciation FSK data transmission or reception) is made, the data is taken into the buffer. When communication is finished, the data is analysed and printed out. When data is received with the line monitor (SW6-No. 8) set to "1 the reception level is also printed out.

Print specifications

1. FS signal delivery start time

   (Hour) : (Minute) : (Second)

   * FSK continuous delivery (e.g., NSF – CSI – DIS): Time is displayed only once.

2. Data from your facsimile machine and data from other facsimile machine are separately printed.

3. FSK data

   (HEX data) (Code) (+/–) X bit {0:–,1:+

4. TCF

   TCF (Modem speed): 2400, 4800, 7200, 9600

5. FIF of DIS, DCS, and DTC

6. CRC error

   <<CRC ERR>>

6-2. FIF abnormalities of DIS, DSC, and DTC

   <<FIF ERR>>

6-3. Data destruction

   <<ABNORMAL END>>

6-4. Data storing buffer full

   <<DATA OVER>>

6-5. When data is abnormal though the storing format is proper, mark "✱" is printed at the data print position.

   * In the case FSK data, HEX data are printed. If there is no corresponding code, marks "✱✱✱" are printed at the code print position. Example: Fo ✱✱✱

7. Phase C

PIX MODE: (Picture quality)

[STD: Standard
[FIN: Fine

WIDTH: (Document width)

[A4]

SPEED: (Modem speed)

[2400
[4800
[7200
[9600

COMP: (Compression method)

[MH
MS/LN: (Minimum scanning time)

[msec./line]

Transmission

```
                                                              P.01
                    ***PROTOCOL MONITOR***
                                              APR-25-88 MON 15:26

TIME          OTHER FAX       YOUR FAX    FIF
-------------------------------------------------------------------
15:26:07      20 NSF                      00,00,31,00,4E,B9,00,84+
                                          00,DD,00,00,DD,DD,00,00+
                                          DD,DD,DD,DD,DD,00,04,25+
                                          01,15,29,30,ED,23,14,00+
                                          00
15:26:08      40 CSI                      39,38,37,36,35,34,33,32+
                                          20,20,20,20,20,20,20,20+
                                          20,20,20,20
15:26:09      80 DIS                      00,4E,B9,00
15:26:10                      43 TSI+     34,39,33,36,33,35,33,34+
                                          37,30,20,20,20,20,20,20+
                                          20,20,20,20
                              23 NSS+     00,00,31,00,06,00,00,06+
                                          A3,10,00,00
15:26:12                      TCF (9600)
15:26:15      84 CFR-

                 +-------------------------+
                 |                         |
                 | **PIX**    MODE  : STD  |
                 |            WIDTH : A4   |
                 |            SPEED : 9600 |
                 |            COMP  : MH   |
                 |            MS/LN : 20   |
                 |                         |
                 +-------------------------+

15:26:28                      2F EOP+
15:26:29      BC MCF-
15:26:30                      FB DCN+
```

Reception

```
                    ***PROTOCOL MONITOR***                    P.01
                                                  JUN- 2-88 THU 10:53

TIME          OTHER FAX       YOUR FAX    FIF
-------------------------------------------------------------------
10:32:10                      20 NSF      00,00,31,00,4E,B9,00,84+
                                          01,11,00,00,DD,DD,00,00+
                                          DD,DD,DD,DD,DD,00,04,02+
                                          04,10,32,04,ED,23,14,00+
                                          00
                              40 CSI      35,31,36,39,34,32,35,31+
                                          30,32,20,20,20,20,20,20+
                                          20,20,20,20
                              80 DIS      00,4E,B9,00
10:32:14      43 TSI+                     20,20,20,20,20,20,20,20+
                                          20,20,20,20,20,20,20,20+
                                          20,20,20,20
10:32:15      23 NSS+                     00,00,31,00,06,00,00,97+
                                          00,DD,00,00,DD,DD,00,00+
                                          DD,DD,DD,DD,DD,00,04,02+
                                          04,09,29,37,ED,23,ED
10:32:16      TCF (9600)
10:32:19                      84 CFR-

                 +-------------------------+
                 |                         |
                 | **PIX**    MODE  : STD  |
                 |            WIDTH : A4   |
                 |            SPEED : 9600 |
                 |            COMP  : MH   |
                 |            MS/LN : 20   |
                 |                         |
                 +-------------------------+

10:32:40      2F EOP+                     01,11,00,00,DD,DD,DD,DD+
                                          DD,00,06,02,04,09,29,37+
                                          00,00,41,00,01,40,00
10:32:42                      BC MCF-
10:32:44      FB DCN+
```

NOTE: FIF data is used to trouble shoot communication problems by SHARP.

SW6 No. 8 Line monitor
Normary set to "0". If set to "1", the transmission speed and the reception speed are displayed on the LCD. Used for line tests.

SW7 No. 1 Reserved
Set to "0"

SW7 No. 2 ECM (MMR) mode
ECM SHARP's MMR mode Enable/Disable
In this machine, the standard MR mode of ECM is slightly modified to become Sharp's MMR mode for increasing the transmitting speed.
When this switch is set to "1," the machine goes into the normal ECM MR mode. Judgment is automatically made according to the remote machine. Therefore, set it to "0" in normal cases.

SW7 No. 3 Dial pulse for Norway
Used to select the dial pulse type.
In Norway, there are two type exchanger, one is normal dial pulse type (n) and another one is reverse dial pulse type (10-n).
Set this switch according to the type of exchanger.

SW7 No.4 Reserved
Set to "0".

SW7 No.5 – No.8 Signal transmission level
Used to control the signal transmission level in the range of –1dB to –16dB.

SW8 No.1 Memory input mode
In the case of memory transmission, etc., only letter size (A4) documents can be store in the memory. To input B4 documents into the memory, therefore, the B4 documents should be reduced to letter size (A4) or the both ends of B4 documents should be cut off to input the center letter-size (A4) portion. This switch provides the selection.

0: Reduced to A4 size and inputted.

1: The both ends are cut off and the center portion (A4 size) is inputted.

SW8 No.2: Cut-off data (In copy mode)
When copy, if the scanned data are to outdo the range of recording, the operator has one of the choices below using the switch.

0: Continue: Data are printed over a next page with the last 20mm also printed at the beginning of the next page.

1: Cut off: Data scanned out of the limit are aborted (a page is printed.)

SW8 No.3 Reduce rate (In A4 receive)
When receiving a document, this model adds about 0.5mm of blank marginal space around the edges of the document. This function operates when a document is received with data in the extreme top or bottom area of a page – to avoid loss of this data. When data is detected in the "fringe" area – outside of center length area of 10.5" (268mm) but not over 11.4" (290mm) – the overall image is automatically reduced to either 87% or 94% before printing. Select 87% if documents are received often with top and bottom data, or if the sender often adds a special message imprint at the top of the first page. Select 94% for minimal reduction. (Note: When data is outside of 11.4" length area, document is automatically continued on a second sheet.)

SW8 No.4 Line echo countermeasure
This switch is used to select whether transmission ECHO countermeasures, etc are performed or not.

SW8 No.5 H2 mode
Used to determine H2 mode (15 sec transmission mode). When set to OFF, H2 mode is inhibited even though the transmitting machine has H2 mode function.

SW8 No.6 Reduction at copy
In the case of copy the B4 documents should be reduced to letter size (A4) or the both ends B4 documents should be cut off to print the center letter-size (A4) portion. This terminal provides the selection.

0: Reduced to A4 size and printed

1: The both ends are cut off and the center portion (A4 size) is printed.

SW8 No.7 Reserved
Set to "0".

SW8 No.8 RMS (Remote Maintenance System) function
Used to determine remote maintenance system function. The more detail is page 2-25 and FO53RM Service Manual.

SW9 No.1 – No.4 Recall interval (Not used)
This soft switch is not used. The recall interval is 2.5 minutes fixed, for D, D1 version.

SW9 No.5 – No.8 Recall time
Choice is made to how may redials should be made. Use a binary number to program is. If set to 0 or 1 by accident, the redial number will be set to 2.

SW10 No.1 Reserved
Set to "0".

SW10 No. 2 PBX/PSTN selection
Used to select according to the connected line: PBX (Private Branch Exchange) or PSTN (Public Switched Telephone Network).
If set to 1 (=PBX), PBX ID digit is automatically added when dialling to external line. (For details, refer to the Instruction manual.)

SW10 No. 3 Reserved
Set to "0"

SW10 No. 4 Reserved
Set to "0".

SW10 No. 5 Reserved
Set to "0".

SW10 No.6 Reserved
Set to "0".

SW10 No. 7 ECM mode choice (for Reception)
Used to set the reception mode to disable ECM.

SW10 No. 8 Reserved
Set to "0."

(B) Print diagnostics

1. diagnostic description

Pressing the keys in the following sequence selects the fax diagnostics mode and displays the following prompt:

FUNC → 9 → ✱ → 8 → # → 6

ROM Ver. ○○○○○○○

The codes shown are the ROM version number:

○○○○○○○ : ROM for PCU

Select the desired item by pressing the "✱" or "#" key (or by directly entering the number on the rapid dial keypad). Press the START/COPY key to go into the selected diagnostic mode.

2. Diagnostic items

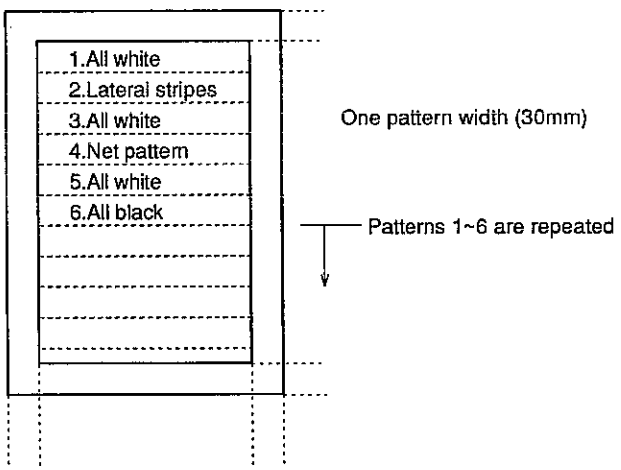
01 Print area print
02 Check pattern 1 (Lateral stripe pattern, 1 sheet)
03 Check pattern 2 (Lateral stripe pattern multi-page)
04 Check pattern (Half tone, 1 sheet)
05 Paper pass aging
06 Printer life counter

3. Diagnostic description

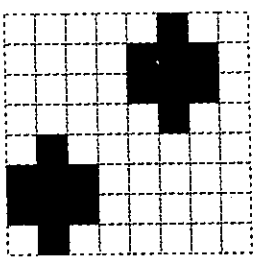
(1) Print area print

Printing is performed in the effective print are according to specified paper size.

cf. Letter, legal size



[Net pattern]



The pattern shown on the left is repeated.

(2) Check pattern 1

Lateral stripe patterns are printed on whole one sheet. (Two black lines and two white lines alternately.)

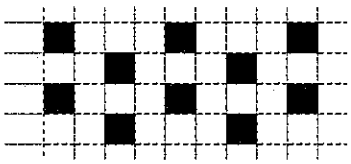
(3) Check pattern 2

Lateral stripe patterns are printed on multiple pages. Press the STOP key to end printing.

(4) Check pattern 3

Half tone pattern is printed on a sheet.

[Half tone pattern]



(5) Paper pass aging

PAPER AGING 1: WHITE 2: BLACK

Press "1" or "2" key to start printing.
Press the STOP key to end printing.

(6) Printer life counter

The status of the printer life can be ready by the engineer. This is a decremental counter which counts down from 200,000.

(C) Printer diagnostics

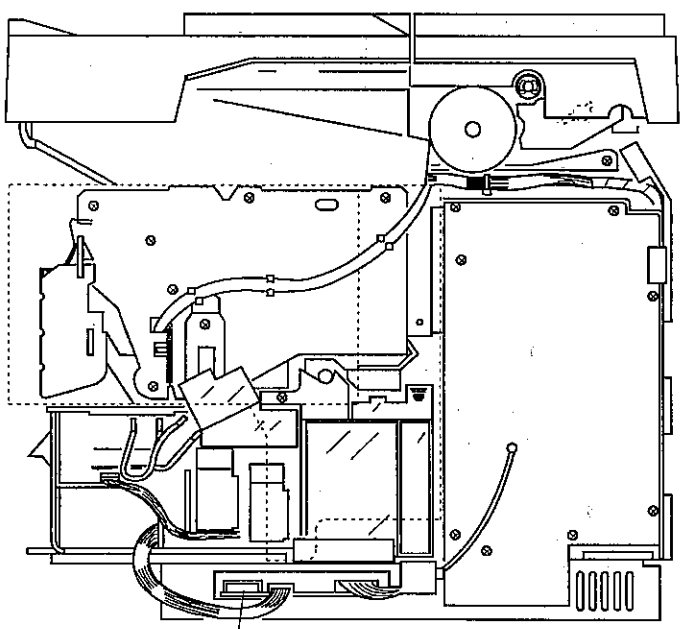
The laser printer conditions can be checked with the following LBP diagnostics. The LBP diagnostics are provided for the service engineers to check the conditions of each section of the printer.

Note: It is requir to use the service operation tool.

1. Tool setting procedure

① Remove handset holder ass'y.

② Remove rear cabinet.



CN14 Rear view

③ Connect the service tool connector to CN14 of the PCU PWB.

④ Attach the handset holder ass'y.

2. Entering the DIAGNOSTIC mode

Keep the MENU and ENTER keys depressed, turn on the power switch.

3. Executing DIAGNOSTIC function

Select the menu with the MENU and Δ, ∇ keys, and execute diagnostic function with FORM FEED keys.

To return to the menu during execution of diag function, press the RESET key.

4. DIAGNOSTIC display

When the machine enters into DIAG mode:

1. All LED's are lighted for 1 sec.
2. "PCU DIAG MODE X" is displayed. (X: PCU ROM version)

When diagnostic is being executed:

DATA LED is blinking.

5. List of the functions

<table>
<tr><th>Menu</th><th>Function</th><th>Execution</th><th>Cancel</th></tr>
<tr><td>TOP MARGIN XX</td><td>Lead edge adjustment value setting
Set with Δ and ∇ keys.
Print a sheet with FORM FEED key.
XX=00 – 99(1 count: 1/100inch)
Adjust the setting value so that the top margin is 1/5" –2mm +1mm.</td><td>[FORM FEED]</td><td>After printing</td></tr>
<tr><td>LEFT MARGIN XX</td><td>Left margin setting
Set with Δ and ∇ keys.
Print a sheet with FORM FEED key.
XX=20 – 99(1 count: 1/100inch)
Adjust the setting value so that the left margin is 10 ± 2mm.
(When the value is set to the above range, the left margin is 1/6" ± 2mm when ICU SELF-TEST#2 is performed.)</td><td>[FORM FEED]</td><td>After printing</td></tr>
<tr><td>SW SCAN XX</td><td>The internal SW active state is displayed by LED.
Select SW NO. with Δ and ∇ keys.
XX = 01 – 04
(When 03 is being executed, EXPFS and PFMD are on.
When 04 is being executed, ENFMD is on.)
Note: Switch check with * mark should be performed with the upper frame closed.
<table><tr><th>SW NO.\LED</th><th>READY</th><th>MANUAL</th><th>ONLINE</th><th>DATA</th></tr><tr><td>01</td><td>DOOR OPEN</td><td>PIN*</td><td>HFIN*</td><td>POUT*</td></tr><tr><td>02</td><td>PE*</td><td>PS1</td><td>PS2</td><td>PS3</td></tr><tr><td>03</td><td>EXPE*</td><td>EXPS1</td><td>EXPS2</td><td>EXPS3</td></tr><tr><td>04</td><td>ENPE</td><td>ENCON</td><td>EXCON</td><td>TE</td></tr></table></td><td>FORM FEED]</td><td>[RESET]</td></tr>
<tr><td>(COUNTER SET XXX)</td><td>Life counter set
Select with Δ and ∇ keys.
XXX = PRN : Printer life
OPC : Drum cartridge life
DV : Developer cartridge life
Every two digits are set from the bottom.
The two blinking digits can be set.
Δ : Count up
∇ : Count down
ENTER : To the next digit</td><td>FORM FEED]</td><td>[RESET]</td></tr>
<tr><td>(NVRAM INITIAL)</td><td>NVRAM initialization
Left : 50
Top : 50
Printer life : 200,000
Drum cartridge life : 50,000
Developer cartridge life : 25,000</td><td>FORM FEED]</td><td>[RESET]</td></tr>
</table>

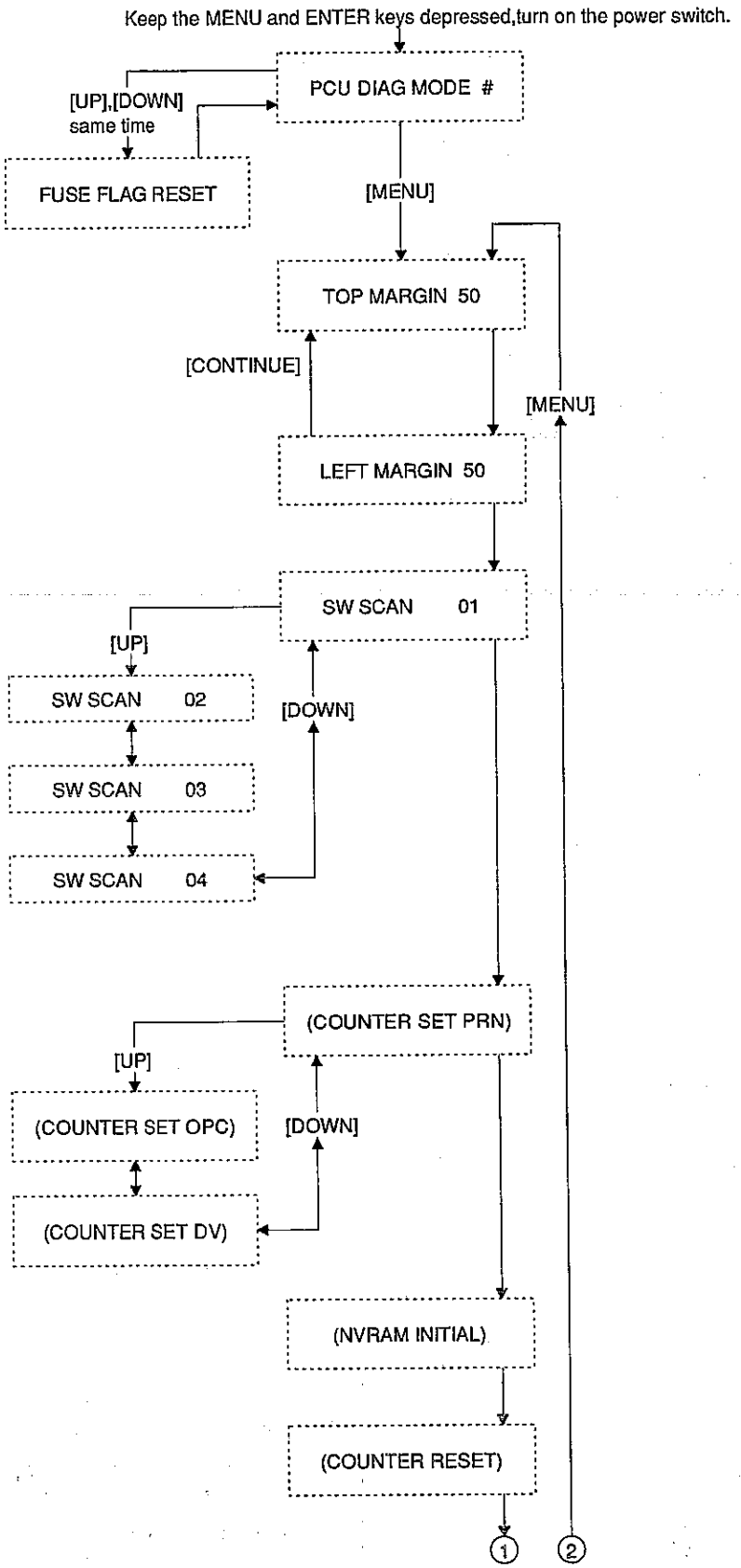
Menu	Function	Execution	Cancel
(COUNTER RESET)	Life counter reset Printer life : 200,000 Drum cartridge life : 50,000 Developer cartridge life : 25,000	[FORM FEED]	[RESET]
DIAG EXIT	End of diagnostic	[FORM FEED]	
OPTICAL SYS TEST	Optical system test Note: If this test is performed for a long time with the drum cartridge installed, the photoconductor may be damaged. Error is not detected. (Cover open and C3 are not detected) Polygon motor and laser are on. When SYNC is detected, ONLINE (LED) lights up. With the cover open, the polygon motor and the laser are not turned on.	[FORM FEED]	[RESET]
VOL TEST XX	High voltage PWB test (30 sec ON) Select with Δ and ∇ keys. XX =MC : Main corona, grid HIGH GRL : Main corona, grid LOW TC : Transfer corona BS : Main corona & bias Note: If the drum cartridge is not installed, the grid bias and the DV bias are not outputted. If this test is performed for a long time, the photoconductor may be damaged.	[FORM FEED]	[RESET]
TEST PRINT (For factory test)	Test print Select MODE with the MENU, ENTER, Δ, and ∇ keys. JAM XXX XXX = ON : YES OFF : NO Set to OFF to operate without paper. HEATER XXX XXX = ON : Temperature control YES OFF : Heater OFF MULTI XXX XXX = ON : Multiple OFF : Single LIFE XXX XXX = ON : Life over error YES OFF : Life over error NO When set to ON, the machine will stop by "Life over." CASSETTE XXX XXX = STD : Standard cassette OPT : Option cassette TONER XXX XXX = ON : Toner empty YES OFF : Toner empty NO When set to ON, the machine will stop by "Toner empty."	[FORM FEED]	[RESET] (After printing)
TOTAL XXXXXX	Total counter display		

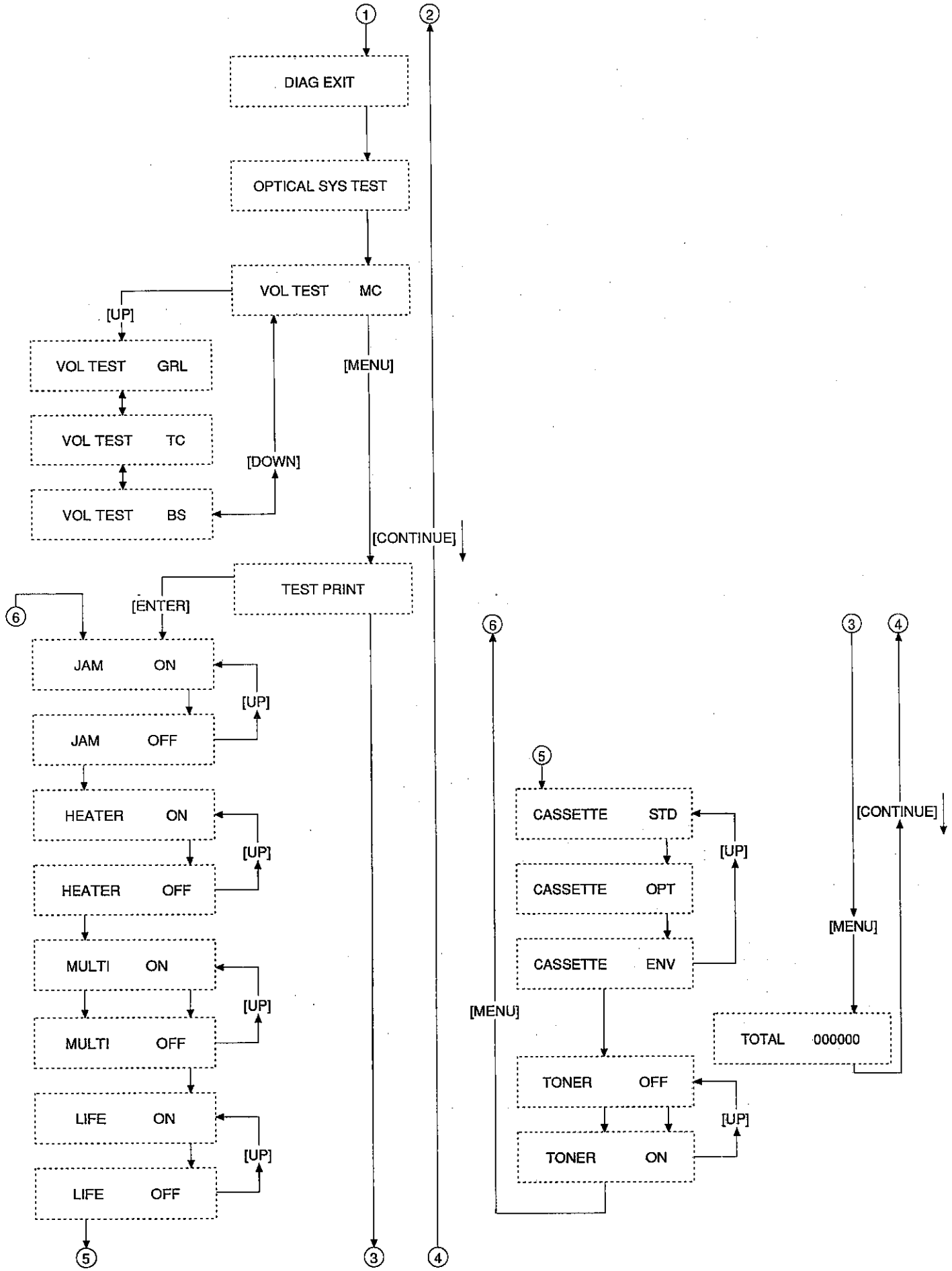
[NOTE] Except for test print, no error detection.

No paper-empty detection in any print mode of the PCU diag.

Note: If printing is performed without paper, JAM error is displayed.

8. DIAG operating sequence




1
2
DIAG EXIT
OPTICAL SYS TEST
VOL TEST MC
[UP]
VOL TEST GRL
VOL TEST TC
VOL TEST BS
[DOWN]
[MENU]
[CONTINUE]
TEST PRINT
[ENTER]
6
JAM ON
[UP]
JAM OFF
HEATER ON
[UP]
HEATER OFF
MULTI ON
[UP]
MULTI OFF
LIFE ON
[UP]
LIFE OFF
5
3
4
6
5
CASSETTE STD
[UP]
CASSETTE OPT
CASSETTE ENV
[MENU]
TONER OFF
[UP]
TONER ON
3
4
[CONTINUE]
[MENU]
TOTAL 000000

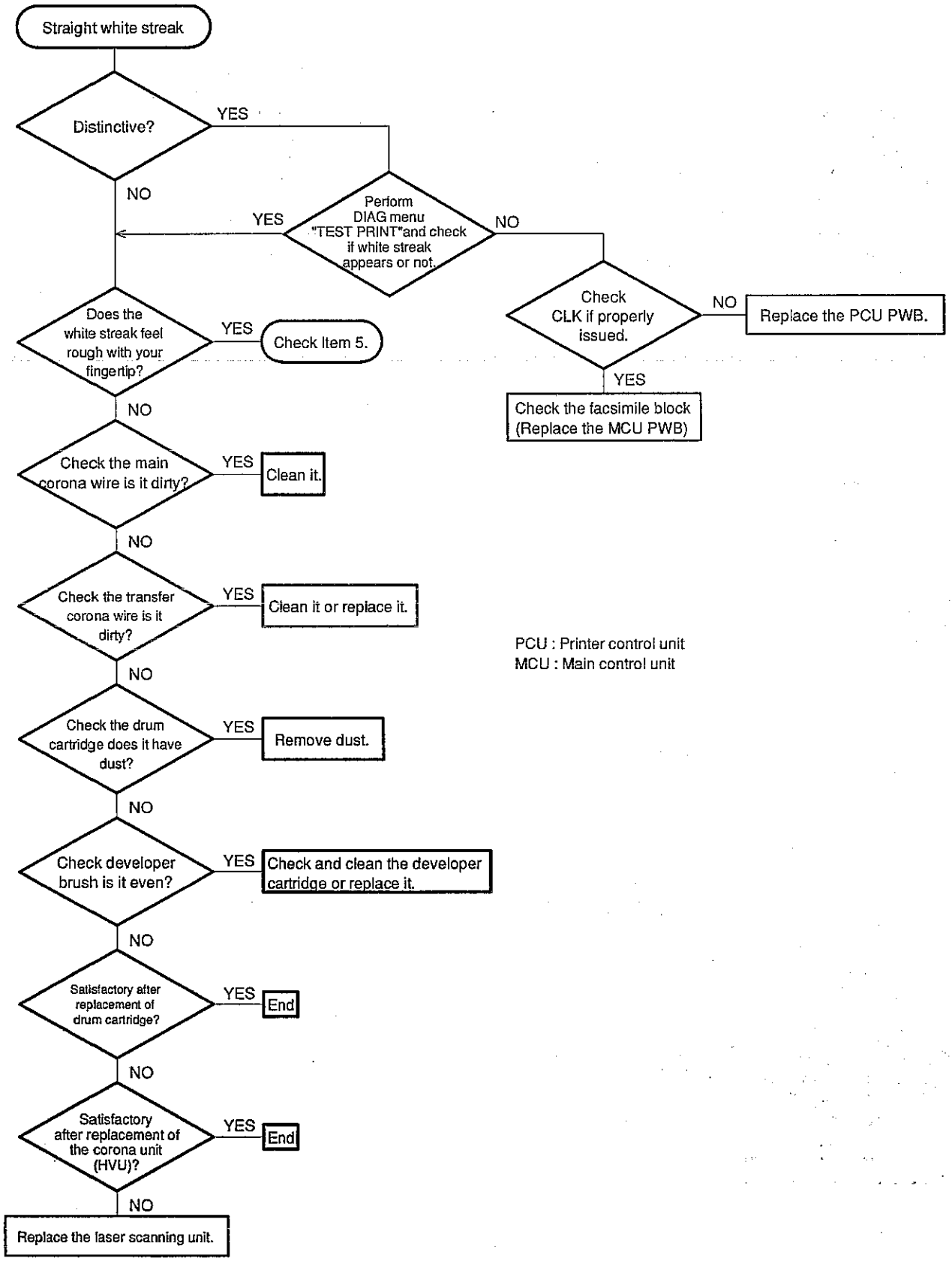
[3] TROUBLESHOOTING

Troubleshooting (A) is for printing problems, troubleshooting (B) is for error codes, and (C) is for communication troubleshooting.

(A) Printer troubleshooting

1. White line appearing vertically on print

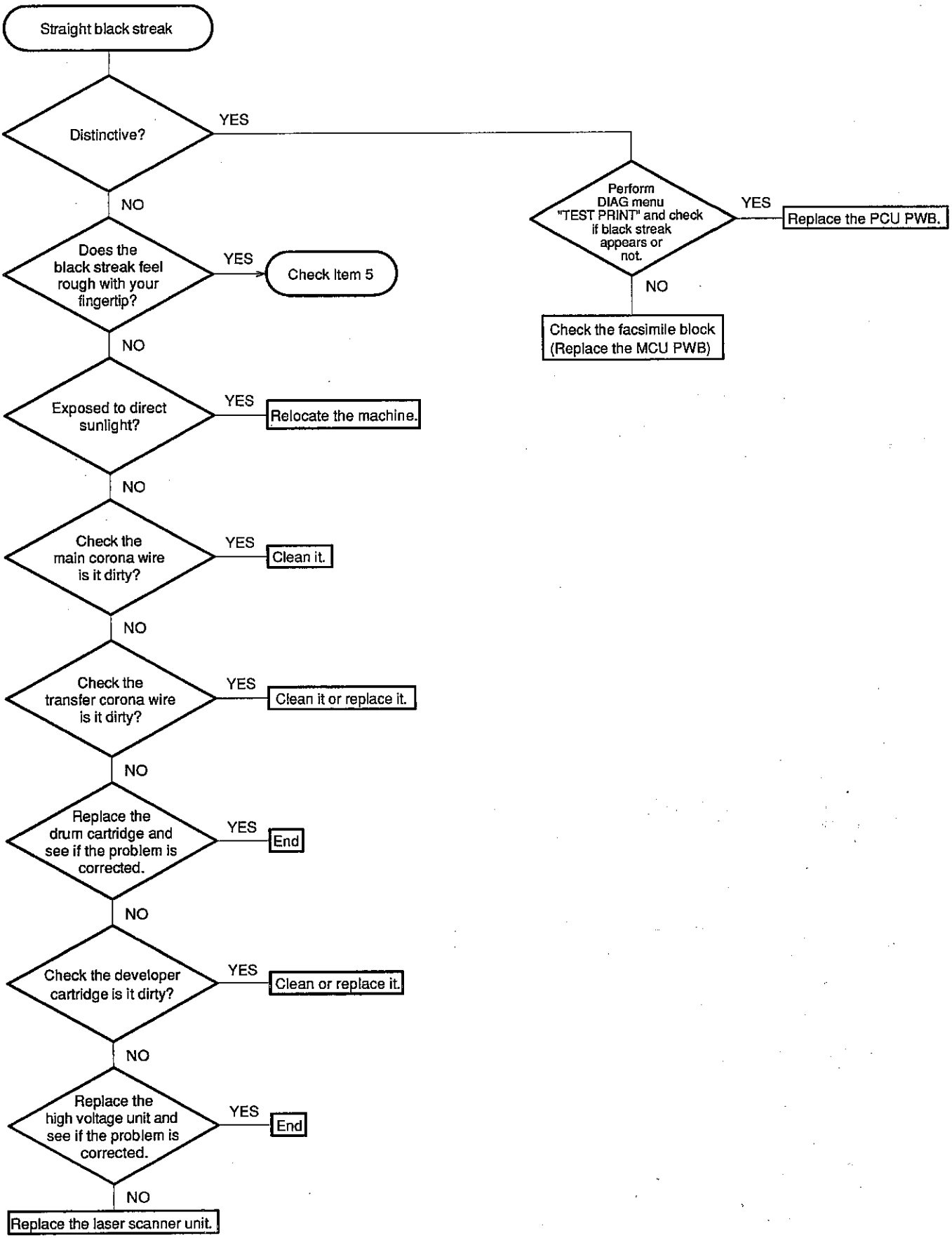
■ Appearance of white streak or band in the paper feeding direction



PCU : Printer control unit
MCU : Main control unit

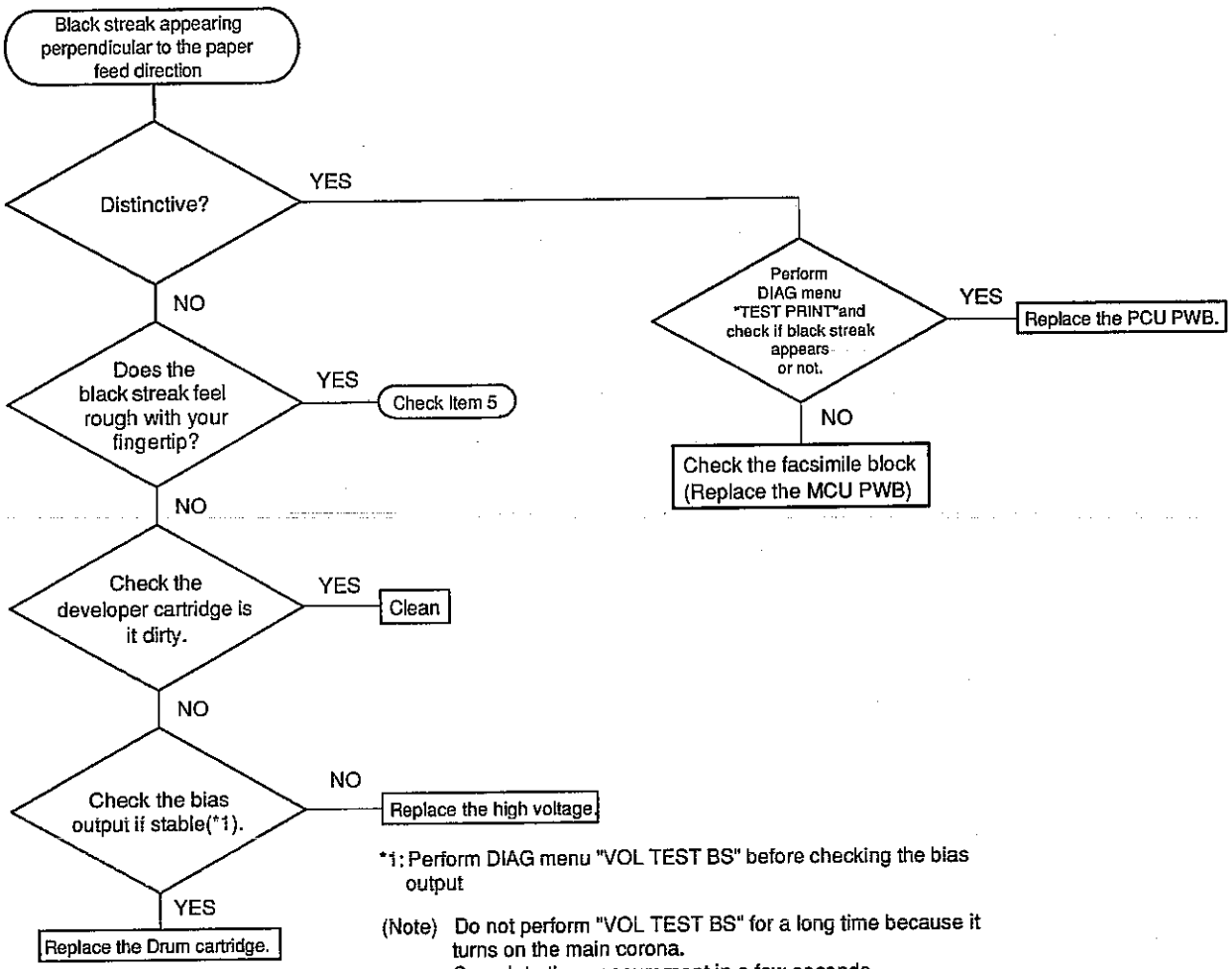
2. Black line appearing vertically on print

■ Appearance of black streak or band in the paper feeding direction



3. Black line appearing horizontally on print

■ Appearance of black streak or band perpendicular to the paper feeding direction

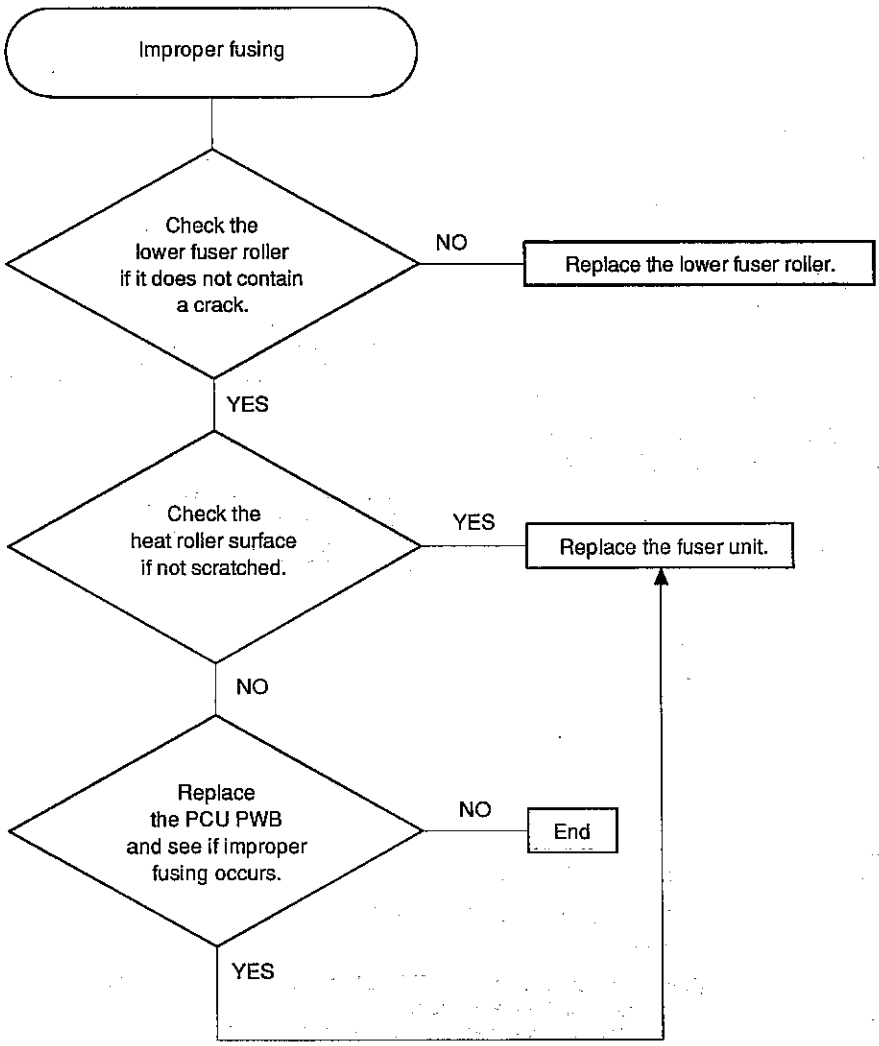


*1: Perform DIAG menu "VOL TEST BS" before checking the bias output

(Note) Do not perform "VOL TEST BS" for a long time because it turns on the main corona.
Complete the measurement in a few seconds.

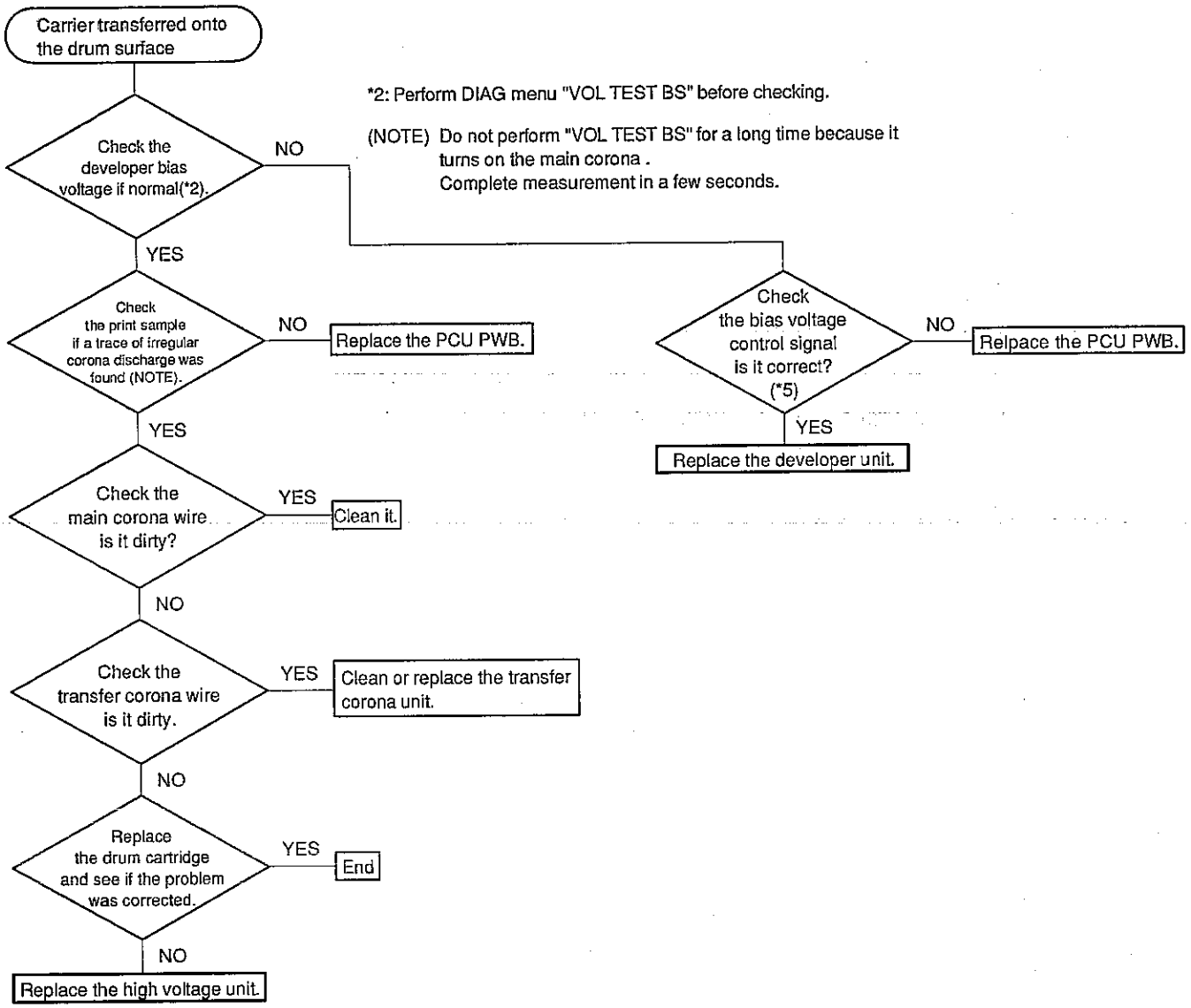
4. Poor fusing

■ Printed image felt rough and toned image easily wiped away with your fingertip



5. Carrier transferred onto the drum surface

■ Printed image felt rough and toned image easily wiped away with your fingertip


Carrier transferred onto the drum surface
Check the developer bias voltage if normal(*2).
NO
YES
Check the print sample if a trace of irregular corona discharge was found (NOTE).
NO
Replace the PCU PWB.
YES
Check the main corona wire is it dirty?
YES
Clean it.
NO
Check the transfer corona wire is it dirty.
YES
Clean or replace the transfer corona unit.
NO
Replace the drum cartridge and see if the problem was corrected.
YES
End
NO
Replace the high voltage unit.
Check the bias voltage control signal is it correct? (*5)
NO
Relpace the PCU PWB.
YES
Replace the developer unit.

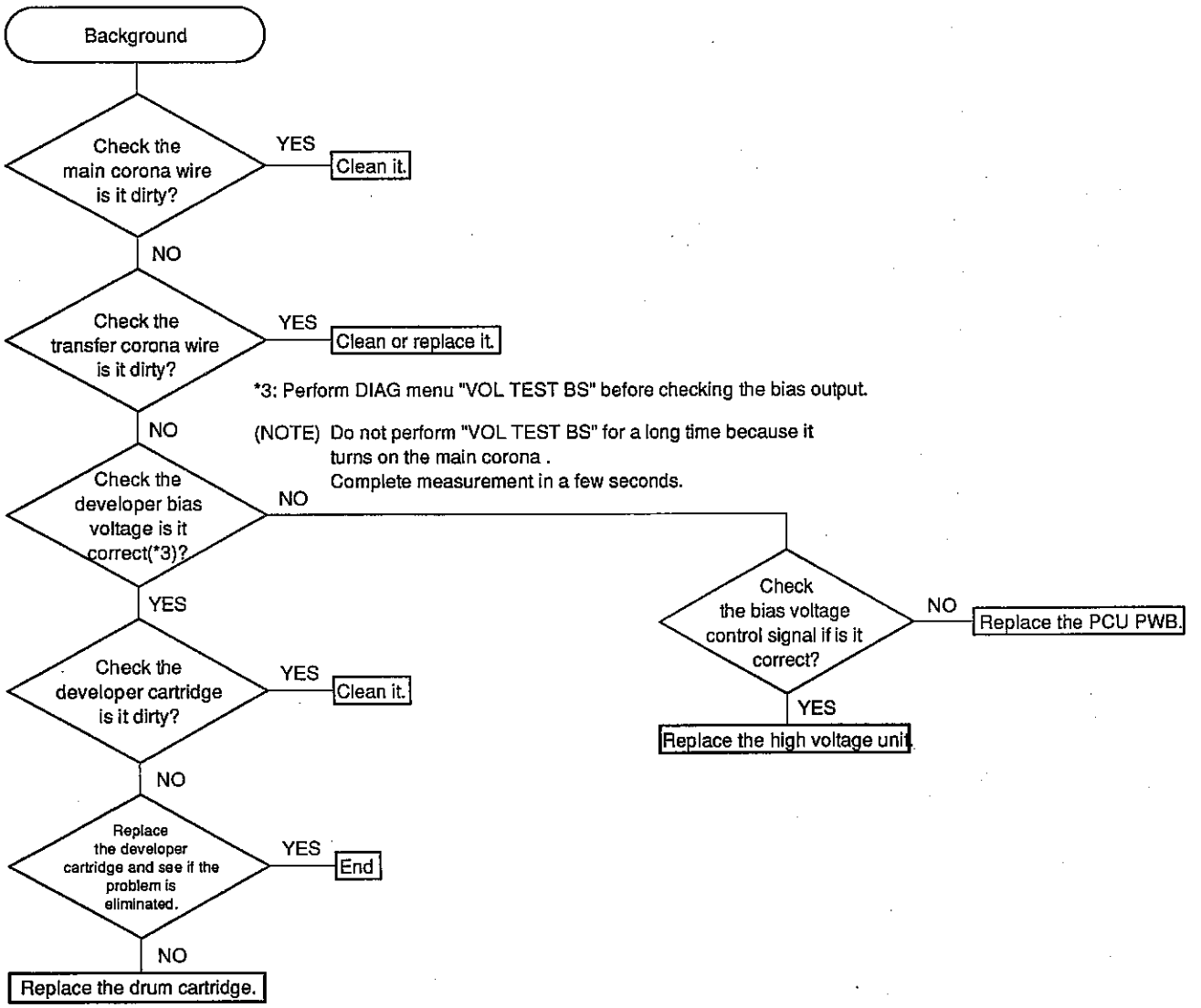
*2: Perform DIAG menu "VOL TEST BS" before checking.

(NOTE) Do not perform "VOL TEST BS" for a long time because it turns on the main corona .
Complete measurement in a few seconds.

NOTE: Black or white bands may appear in the paper feeding direction if it is an irregular corona discharge.

6. Background

■ Background copied on a part or on the entire area of print

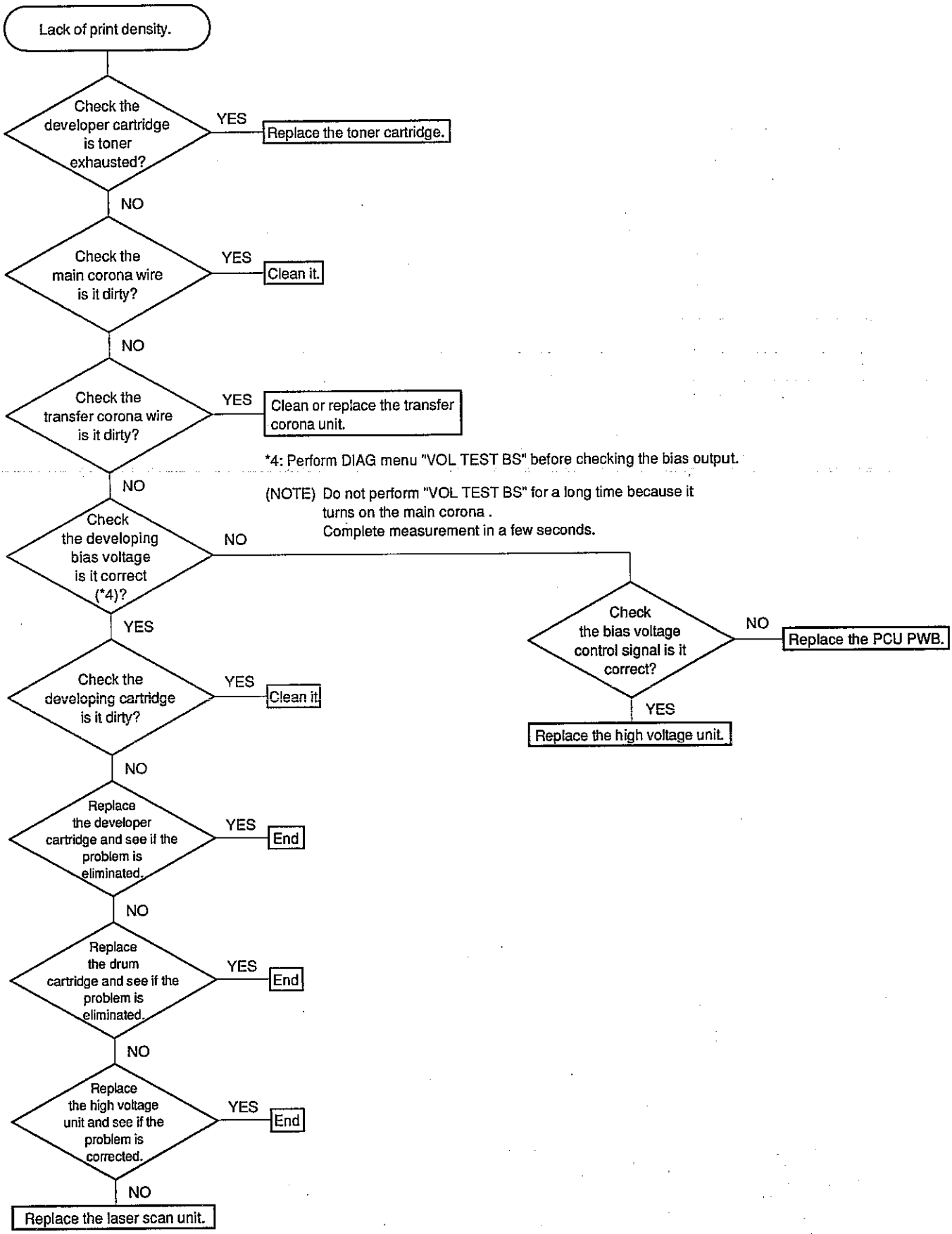


*3: Perform DIAG menu "VOL TEST BS" before checking the bias output.

(NOTE) Do not perform "VOL TEST BS" for a long time because it turns on the main corona .
Complete measurement in a few seconds.

7. Lack of print density

■ Extremely light print density



*4: Perform DIAG menu "VOL TEST BS" before checking the bias output.

(NOTE) Do not perform "VOL TEST BS" for a long time because it turns on the main corona .
Complete measurement in a few seconds.

D. REMOTE MAINTENANCE SYSTEM

1. Planning Intentions

Introduction of this system is expected to bring such advantages to the local distributors, dealers, and users respectively as described below.

Local distributor	① Augmentation of the relations with the dealers. ② Increase of number of SHARP's PPF dealers, and continuation of them as our dealers. ③ Prompt servicing and support to the dealers.
Dealer	① Business stabilization by acquiring maintenance contacts. ② Facilitated customer management. ③ Well-timed and speedy supply of consumables. ④ Laber saving for servicing activities.
User	① Acquisition of speedy maintenance service. ② Parting from shortage of any consumables.

Some of our competitors have already started remote diagnosis and the like as services. However, our remote maintenance system will not only support service activities given to the users but enable the local distributors and the dealers to benefit from it.

For the dealers, the system will allow them to get continuous relations with the customers and stabilized proceeds from maintenance contracts and supplies of consumables. For the local distributors, it will increase SHARP's PPF dealers and hold them staying as our dealers.

Construction of our remote maintenance system is thus expected to greatly contribute to our facsimile sales expansion.

2. General Descriptions

2-1. Outline

The remote maintenance system enables the personal computer of the dealer to take in various informative data of the fax machines installed at the users. The dealer is thereby allowed to check from a distance the statuses of the users' fax machines. The dealer can also use its personal computer for various data entries into the fax machines of the users, their soft switch change, self-diagnosis, etc. by way of remote control.

2-2. Functions

Remote Maintenance System

Consumables control function

By enabling the dealer to know how much the consumables have so far been used, the dealer can timely supply the consumables for effective service and customer management.

- Photosensor
- Developing bath
- Toner

Remote setting function

By remote control for various entries and settings, the service activities can be made speedy, effectual, and labor saving.

- Setting/changing data for auto dialing
- Checking/changing soft switch setting
- Time change when the summer time is started or for other reason.
- Others

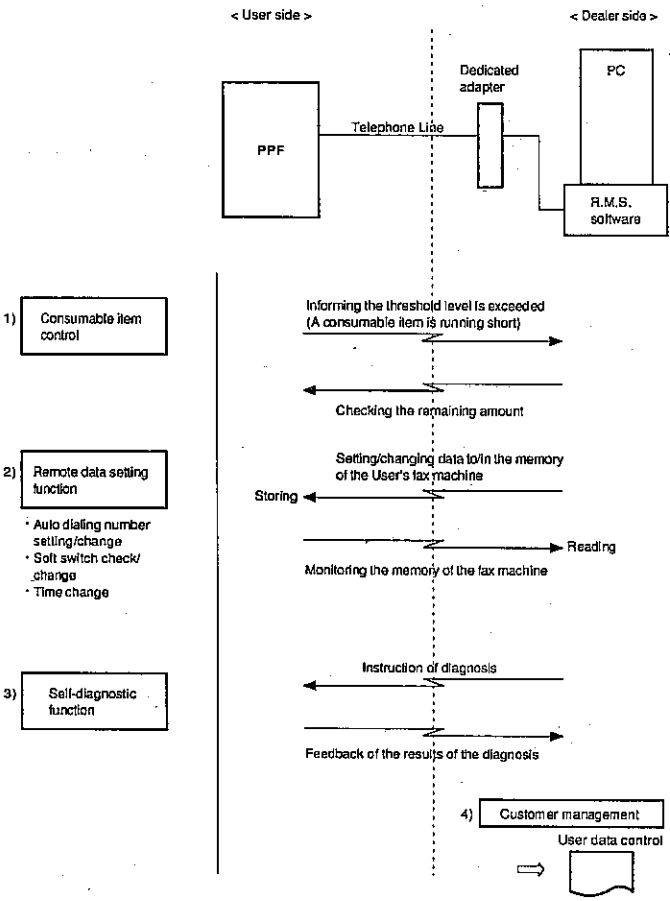
Self-diagnostic function

By automatically letting know any trouble of the printer of facsimile block, the dealer can speedily offer service to the user so that improvement of therate of machine operation and stabilized quality assurance can be expected.

- Trouble with the printer block
- Trouble with the facsimile block
- ROM version check

3. General System Configuration

3-1. System configuration


< User side >
< Dealer side >
Dedicated adapter
PC
PPF
Telephone Line
R.M.S. software
1) Consumable item control
Informing the threshold level is exceeded (A consumable item is running short)
Checking the remaining amount
2) Remote data setting function
Setting/changing data to/in the memory of the User's fax machine
Storing
Reading
Monitoring the memory of the fax machine
• Auto dialing number setting/change
• Soft switch check/ change
• Time change
3) Self-diagnostic function
Instruction of diagnosis
Feedback of the results of the diagnosis
4) Customer management
User data control

3-2. Basic configuration

1) User
   - Fax machine (Communication using a fax modem)
2) Dealer
   - Personal computer (Host machine): AX personal computer (for Japan)/IBM personal computer or compatible (for other than Japan)
   - Fax board or box
   - Software
   - Hard disk: May become necessary for dealers that have many contracted users.

4. Functions

4-1. Consumable item control function

When a consumable item runs short (or when the preset threshold level is reached), this function transmits the applicable signal to the personal computer of the dealer.

Also, the function enables the dealer to check the current conditions of the consumables at any time.

1) Photosensor
   a) Automatic signal transmission when the expected life is reached:

      When the number of sheets copied exceeds 50000 or when a year has passed after the installation, the applicable signal is transmitted to the personal computer of the dealer.

   b) Checking the counter:

      The counter is checked from the dealer side.
2) Developing bath
   a) Automatic signal transmission when the expected life is reached:

      When the number of sheets copied exceeds 25000, the applicable signal is automatically transmitted to the personal computer of the dealer.

   b) Checking the counter:

      The counter is checked from the dealer side.
3) Toner
   a) Automatic signal transmission when the toner is running short:

      When the toner is running short, the applicable signal is transmitted to the personal computer of the dealer.

   b) Checking the counter:

      The counter is checked from the dealer side.
4) Total counter
   a) Checking the counter:

      The counter is checked from the dealer side.

4-2. Remote setting function

By remote control operation at the personal computer of the dealer, the remote setting function can monitor the data in the memory of the facsimile machine (Reading), and can set data and change data to/in the memory (Storing).

1) Setting/changing data for auto dialing
2) Setting/changing informative data of senders
3) Date and time setting/changing
4) Polling permission number setting/changing
5) System number setting/changing
6) ID code setting/changing
7) Confidential ID code setting/changing
8) Program setting/changing
9) Relay group setting/changing
10) Group setting/changing
11) User switch changing
12) Soft switch changing
13) Communication record table reading

4-3. Self-diagnostic function

In case of a trouble with the fax machine, a signal is transmitted to the personal computer of the dealer to tell the type of that trouble automatically or in response to an instruction from the personal computer.

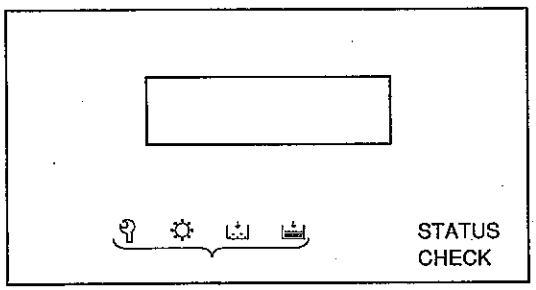
1) Trouble with the printer block (Only for automatic transmission)
   a) Heater temperature too low
   b) Heater temperature too high
   c) Thermister open
   d) Main motor in trouble
   e) Optical system error
   f) Polygon motor in trouble
   g) NV-RAM error
   h) PCU-RAM error
   i) PCU-ROM error
2) Trouble with the facsimile block
   a) Reading system error
   b) Communication protocol error
3) ROM version check
4) Communication error type check

   Protocol monitor data reading
5) Trouble status check
   a) Document jam
   b) Recording paper jam

(B) Troubleshooting for error code

1) Error display

If any trouble occurs in the facsimile machine, the error status is displayed as follows:



When an error occurs, the corresponding error lights up to indicate the mark. (The mark cannot be seen in the normal state.)

: When it requires to call a serviceman (for example, the printer section abnormality), this mark lights up and the trouble status is displayed.

: When it requires to replace the developer cartridge, this mark lights up, and "DV LIFE OVER" is displayed.

: when the toner concentration falls below a certain level, this mark lights up, and "TONER EMPTY" is displayed.

: When paper is exhausted, this mark lights up, and "NO PAPER" is displayed. (If, however, there is some paper in one of the cassettes when an option cassette is installed, reception is allowed.)

"STATUS CHECK"

In case of the other troubles than shown above, the corresponding LED will blinks and the trouble status is displayed.

- Paper jam
- Replacement of the photoconductor cartridge
- Replacement of the toner collection container
- Cover open
- Print life over

2) User maintenance

The following maintenances are performed by the user.

1. Paper jam treatment
2. Developing cartridge replacement
3. Photoconductor cartridge replacement
4. Toner cartridge replacement
5. Toner collection container replacement
6. Corona wire cleaning

3) Kind of troubles

Display	Error	Cause	Countermeasures
DV LIFE OVER SET UP OF NEW DV	DV life is over.	① Copy count has reached 25,000. ② Copy count is over 25,000 when the power is turned on. ③ Copy count has reached 28,000.	If copy count is smaller than 28,000. replace the DV cartridge.
TONER EMPTY	Toner empty	① The toner concentration reduces. ② The toner cartridge is not installed.	Replace the toner cartridge.
NO PAPER	No paper	There is no paper in the cassette. If there is no paper in either cassette when the option cassette is installed, the error status is displayed.	Supply paper.
PAPER JAM	Paper jam	Paper is jammed when printing is started.	Remove paper jam.
OPC LIFE OVER SET UP OF NEW OPC	OPC (drum) cartridge life is over.	① Copy count has reached 50,000. ② Copy count is over 50,000 when the power is turned on. ③ Copy count has reached 55,000.	If copy count is smaller than 55,000, replace the OPC (drum) cartridge.
WASTE TONER FULL	Toner collection container full	The toner collection container is not replaced when the toner cartridge is replaced.	Replace the toner collection container. (Replace it when the toner cartridge is replaced.)
COVER OPEN	Cover open	The cover is open.	Close the cover.

4) Servicer engineer call error

Work by the service engineer is required when one of the following errors is displayed.

a. P1 to P3
A fault in the PCU (process control unit).

b. C1 to C6
Printer mechanism fault.

Service engineer call error

Error status display	Error description
SERVICE (P1)	PCU ROM Checksum Error
SERVICE (P2)	PCU RAM Read/Write Error
SERVICE (P3)	Non-volatile RAM Read Error

Error status display	Error description
SERVICE (C1)	Optical System Error
SERVICE (C2)	Main Motor Defective
SERVICE (C3)	Polygon Motor Defective
SERVICE (C4)	High Heater Temperature
SERVICE (C6)	Thermistor Open

5) Error check point

	Cause	Error description		Action
	COVER OPEN	1) Check the upper frame if not open. 2) Check the DSW24 or lock plate switch if it operates normally. 3) Check the FD guide arm if it operates normally. 4) Check that IC1 (CPU) 51 pin voltage is about 5V.	Yes No No No Yes	Close the upper frame. Replace the DSW24 or lock plate switch with a new one. Replace the FD guide arm with a new one. Contact failure. Replace the CPU (μPD78214) with a new one.
	PAPER JAM	1) Check the machine for paper. 2) Check the paper detect sensor actuator, if normal. 3) Turn on and off the actuator and check that IC2 (PCUGA) 26 pin or 27 pin signals turn from high to low.	Yes No No Yes	Remove the paper. Replace the paper detect sensor. Replace the paper detect sensor Contact failure Replace IC2 (PCUGA) with a new one.
	PAPER OUT	1) Check the paper cassette, if empty. 2) Check the paper empty sensor actuator, if nomal. 3) Turn on and off the paper empty sensor and check that IC2 (PCUGA) 13 pin signal is changed from High to Low.	Yes No No Yes	Replenish paper in the cassette. Replace the paper empty sensor. Replace the paper empty sensor Contact failure Replace IC2 (PCUGA) with a new one.
P1	PCU ROM Sum-check error	Check the CPU if the correct one is used.	Yes	Replace the CPU(μPD78214) with a new one.
P2	PCU RAM read/writ error	Check the CPU if the correct one is used.	Yes	Replace the CPU(μPD78214) with a new one.
P3	NVRAM read error	1) Check the CPU, if operating normally. Check CE and SK received at power on.	No Yes	Replace the CPU(μPD78214) with a new one. Replace IC3(S2444R) with a new one.
C1	Optical system failure	1) Check $\overline{\text{LDON}}$, $\overline{\text{VIDEO}}$ if received correctly. 2) CheckK that $\overline{\text{SYNC}}$ is normally supplied to PCUGA 11 pin.	No No	Replace IC2(PCUGA) with a new one. Replace the optical unit with a new one.
C2	Main motor failure	1) Check +24V if properly supplied. 2) Check $\overline{\text{MMD}}$ if properly received when the motor is on. 3) Check $\overline{\text{MMTLK}}$ if properly received when the motor is on.	No No No	Replace the power supply unit with a new one. Replace IC4(μPA2003C) with a new one. Replace the motor with a new one.
C3	Polygonal motor failure	1) Check +24V if properly issued. 2) Check $\overline{\text{PMD}}$ if correctly received when the polygonal motor is on. 3) Check $\overline{\text{PMTLK}}$ if issued properly when the polygonal motor is on.	No No No	Replace the power supply with a new one. Replace IC2(PCUGA) with a new one. Replace the optical unit with a new one.
C4	Irregularly high heater temperature	1) Check the resistance across the thermistor if 100kilohms at room temperature of 25°C. 2) Check $\overline{\text{HLON}}$ if properly issued, not always at a low. 3) Check the P1 phototriac within the power supply unit if operating normally.	No No No	Replace the thermistor with a new one. Replace IC4(UPA2004C) with a new one. Replace P1 with a new one.
C6	Open thermistor	1) Check the resistance across the thermistor if 100kilohms at room temperature of 25°C.	No Yes Yes Yes	Replace the thermistor with a new one. Contact failure RTH detect circuit failure Replace CPU with a new one.

(C) Communication troubleshooting

Refer to the following actions to troubleshoot any of problems mentioned in 1-6.

[1] A communication error evoked.

[2] Image distortion produced.

[3] Overseas communication not enabled.

[4] Image distortion occurs when communicating with a G2 model.

[5] Communication with a G2 model is disabled (a communication error evoked).

[6] Communication speed slow liable to faliback.

- Increase the transmission level Soft switch SW7 No.5 ~ No.8
  Good results in the case of [1] [2] [3] [4] [5]
- Decrease the transmission level Soft switch SW7 No.5 ~ No.8
  Good results in the case of [3]
- Apply line equalization Soft switch SW2 No.5, 6
  Good results in the case of [1] [2] [3] [4] [5] [6]
- Slow down the transmission speed Soft switch SW2 No.7, 8
  Good results in the case of [2] [3]
- Replace the LIU PWB.
  Good resuts in all cases.
- Replace the control PWB.
  Good results in all cases.

[4] ERROR CODE TABLE

Error code table

G3 Transmission

Code	Final received signal	Error Condition (Receiver side)
0	Incomplete signal frame	Cannot recognize bit stream after flag
1	NSF, DIS	Cannot recgnize DCS signal by echo etc. Cannot recognize NSS signal (FIF code etc)
2	CFR	Disconnect line during reception (carrier missing etc)
3	FTT	Disconnect line by fall back
4	MCF	Disconnect line during reception of multi page Cannot recognize NSS, DCS signal in the case of mode change
5	PIP or PIN	No response in receiver side to picture signal after no response in transmitter side to receive TALK mode request
6	RTN or RTP	Cannot recognize NSS, DCS signal after transmit RTN or RTP signal.
7	No signal or DCN	No response in receiver side or DCN signal received* (transmitter side)
8	—	Owing to error in some page the error could not be corrected although the specified number of error retransmission was at tempted.
11	—	Error occurred after or while reception by the remote (receiving) machine was revealed to be impossible.
12	—	Error occurred just after fallback.
13	—	Error occurred after a response to retransmission end command was received.

G3 Reception

Code	Final received signal	Error Condition (Transmitter side)
0	Imcomplete signal frame	Cannot recognize bit stream after flag
1	NSS, DCS	Cannot recognize CFR or FTT signal Disconnect line during transmission (line error)
2	NSC, DTC	Cannot recognize NSS signal (FIF code etc)
3	EOP	Cannot recognize MCF, PIP, PIN, RTN, RTP signal
4	EOM	Cannot recognize MCF, PIP, PIN, RTN, RTP signal in the case of mode change
5	MPS	Cannot recognize MCF, PIP, PIN, RTN, RTP signal in the case of multi page
6	PR1-Q	Cannot recognize PIP, PIN signal in the case of TALK request
7	No signal or DCN	No response in transmitter (cannot recognize DIS signal) or DCN signal received* (receiver side)
8	—	Error occurred upon completion of reception of all pages.
9	—	Error occurred when mode was changed or Transmission/Reception switching was performed.
10	—	Error occurred during partial page or physical page reception.
11	—	Error occurred after or during inquiry from the remote (transmitting) machine as to whether reception is possible or not.
12	—	Error occurred during or just after fallback.
13	—	Error occurred after the retransmission end command was received.
14	—	Error occurred after voice communication command was received.

G2 Transmission

Code	Final received signal	Error Condition (Receiver side)
1	GI	Cannot recognize GC signal
2	CFR	Disconnect line during reception Cannot recognize MCF signal* (transmitter side)
4	MCF	Cannot recognize GC signal in the case of multi page
7	PIS	The receiver side stop

G2 Reception

Code	Final received signal	Error Condition (Transmitter side)
1	GC	Disconnect line during transmission Cannot synchronige* (receiver side)
2	PHS	Disconnect line during transmission Cannot synchronize during picture reception* (receiver side)
4	EOM	Cannot recognize GC signal in the case of multi page
7	PIS	The transmitter side stop

SHORT PIN SELECTION TABLE

Ver	PARTS SELECTION	R13 18k	R12 39k	R14 1k	VR1 10k VR	R1 33k	R2 22k	VA2 NV240 D25	AR1 3P-10 3P-08	C10 D1: 0.022µ D: 0.01µ		L3 4.7mH	L4 N.U.	SHORT	R7 560ohm/ RD22FB		C9 2µ	C13 0.47µ	C14 1µ	VA3 NV100005		R3 220	R4 620	R5 560	R6 100	R8 180	R9 75	R10 300	DUMMY	R6S 15k	C20 0.1µ	VA4 NV027005		R76 10k	R75 68k	R74 D1: 20k D: 22k
	Short Pin No.	SP1		SP2		SP3	SP4	SP5		SP6		SP7	SP8	SP9	SP10		SP11	SP12	SP13	SP14		SP15	SP16	SP17	SP18	SP19	SP20	SP21	SP22	SP23	SP24	SP25		SP26	SP27	SP28
	ON OFF									OFF	ON				ON	OFF	ON	ON	ON	ON	OFF	ON	ON	ON	ON	ON	ON	ON	ON	ON	OFF	ON	ON	ON	ON
	Country Setting	L	R	L	R	D	U	L	R	L	R				L	R				L	R										L	R			
D	Germany	O			O		O		O	O		O				O			O		O			O				O			O		O			
	Switzerland		O	O			O	O			O	O				O			O	O					O			O		O			O			O
	Austria		O		O	O			O	O				O		O			O		O	O				O			O			O			O	
D1	Italy	O			O	O			O	O				O		O			O		O			O			O		O				O			O
	Spain	O			O	O			O	O				O	O				O		O			O			O		O				O			
	Portugal	O			O	O			O	O				O		O			O		O			O			O		O				O			O
	Belgium		O		O	O			O	O				O		O			O		O			O			O		O			O				O
	Sweden	O			O	O			O	O				O		O	O				O		O			O			O				O			O
	Norway		O		O	O			O	O				O		O			O		O		O				O				O	O				O
	Finland		O		O	O			O	O				O		O			O		O		O			O			O				O			O
	Denmark		O		O	O			O	O				O	O			O			O		O				O		O				O			O
	Netherlands		O		O	O			O	O				O		O			O	O				O			O		O				O	O		

TELEPHONE LINE INTERFACE CIRCUIT BOARD (COMP. SIDE PARTS LAYOUT)

Ver	PARTS SELECTION	R73 39k	C19 D1: 0.022µ D: 0.01µ		C23 0.047µ		C22 2.2µ	C21 0.68µ	R79 15k	R80 9.1k	R81 18k	R87 12k	R20 24k
	Short Pin No.	SP29	SP30		SP31		SP32		SP33	SP34	SP35	SP36	
	ON OFF	ON	OFF	ON	ON	OFF			ON	ON	ON		
	Country Setting		L	R	L	R	L	R				L	R
D	Germany	O	O			O		O			O		O
	Switzerland		O			O	O				O	O	
	Austria		O			O	O				O	O	
D1	Italy		O			O	O		O			O	
	Spain	O	O			O	O		O			O	
	Portugal		O			O	O			O		O	
	Belgium		O			O	O		O			O	
	Sweden		O			O	O			O		O	
	Norway		O		O		O			O		O	
	Finland		O			O	O			O		O	
	Denmark		O			O	O			O		O	
	Netherlands		O			O	O			O		O	

CHAPTER 3. MECHANISM BLOCKS

[1] Mechanical block description

A) SCANNING BLOCK

1. Document transport block and diagram

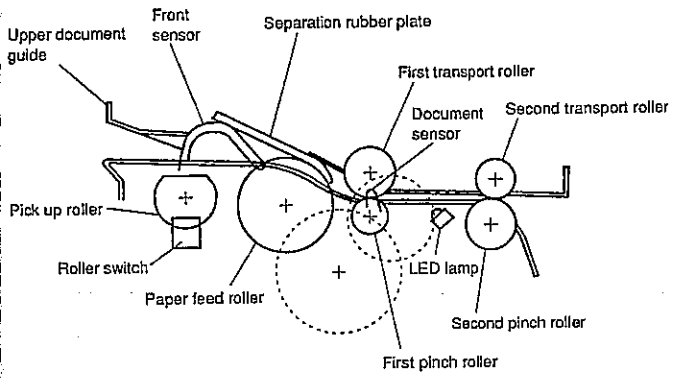


Fig. 1

1-1. Document transport operation

1) The document placed in the hopper actuates the front sensor. After one second, the pulse motor starts to drive the paper feed roller. The document is automatically taken up into the machine, and is stopped at the document sensor.
2) When a specified number of pulses are received from the document sensor after the document lead edge is sensed, scanning is started.
3) When a specified number of pulses are received from the document sensor after the document rear edge is sensed, scanning is terminated and the document is taken out.
4) If the front sensor is active (i.e., another document is in the hopper), when the preceding document scanning is completed and and it is fed out, the following document is taken up into the machine. If the front sensor is not active (i.e., there is no document in the hopper), when the document is fed out, the operation is terminated.

2. Hopper mechanism

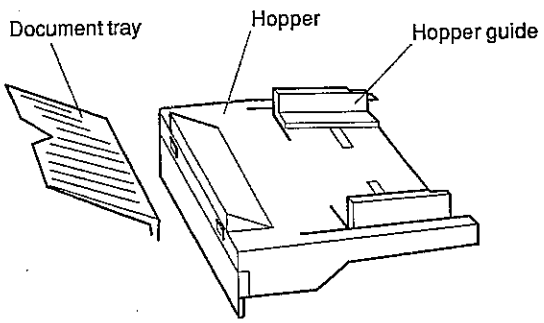


Fig. 2

The hopper is used to align documents to the document guides adjusted to the paper width.

NOTE: Adjust the document guides before inserting the document.

3. Automatic document feed

3-1. Specification

1) Use of the paper feed roller and separation rubber plate ensures error-free transport and separation of documents. The plate spring presses the document to the paper feed roller to assure smooth feeding of the document.
2) Document separation method: Separation rubber plate

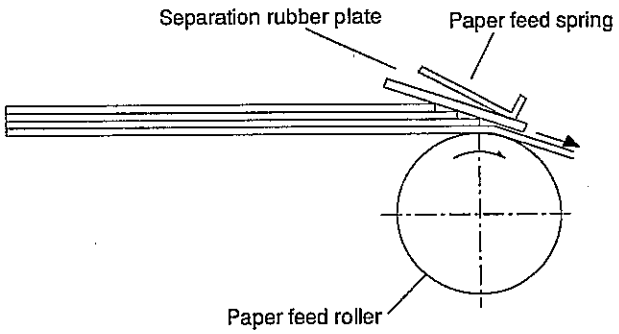


Fig. 3

3-2. Documents applicable for automatic feed

	4x6 series (788 x 1091mm x 1000mm sheets)		Square meter series	
	Minimum	Maximum	Minimum	Maximum
Paper weight	45kg	90kg	52gm/m^2	104g/m^2
Paper thickness (ref.)	0.06mm	0.12mm	0.06mm	0.12mm
Paper size	B6 (128mm x 182mm) ~ B4 (256mm x 364mm) A4 (210mm x 297mm), Letter (216mm x 279mm)			
Paper quality	High quality paper or equivalent			
Feeder capacity	30 sheets, max.			

NOTE: Double-side coated documents and documents on facsimile recording paper should be inserted manually.

Documents corresponding to the paper weight heavier than 90kg (104g/m^2 and lighter than 135kg (157g/m^2) are acceptable for manual feed.

Documents heavier than 135kg in terms of the paper weight must be duplicated on the copying machine to make it operative by the facsimile.

3-3. Loading the documents

1) Make sure that the documents of suitable size and thickness, and free from creases, folds, curls, wet glue, wet ink, clips, staples and pins.
2) Place documents face down in the hopper.
   i) Adjust the document guides to the document size.
   ii) Align the top edge of documents and gently place them into the hopper. The first page under the stack will be taken up by the feed roller to get ready for transmission.

NOTES: 1) Curled edge of documents, if any, must be straightened out.
2) Do not load documents of different sizes and/or thicknesses together.

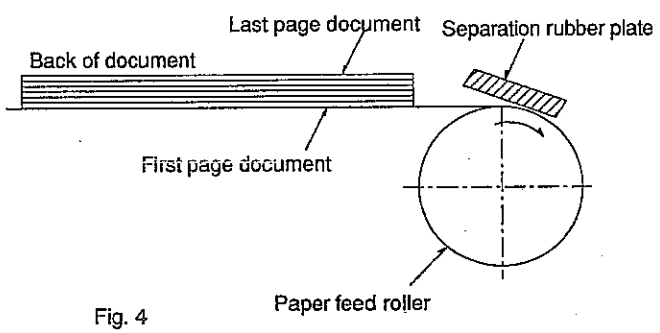


Fig. 4

3-4. Documents requiring use of a document carrier

1) Documents smaller than B6 (128mm x 182mm).
2) Documents thinner than the thickness of 0.06mm.
3) Documents containing creases, folds, or curls, especially those whose surface is curled (maximum allowable curl is 5mm).
4) Documents containing tears.
5) Carbon-backed documents. (Insert a white sheet of paper between the carbon back and the document carrier to avoid transfer of carbon to the carrier.)
6) Documents containing an easily separable writing material (e.g., those written with a lead pencil).
7) Transparent documents.
8) Folded or glued documents.

Document in a document carrier should be inserted manually into the feeder.

4. Document release

4-1. Cross section view

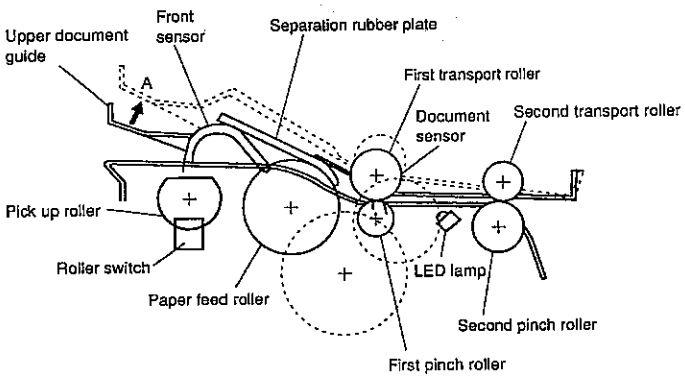


Fig. 5

4-2. General

When the upper document guide is pulled by hand in the direction of arrow A, the latch is released and the upper document guide moves on its axle in the direction of arrow A. The feed rollers, the separation rubber plate, and the first and second pinch rollers become free to make it possible to remove the document.

5. Optical system

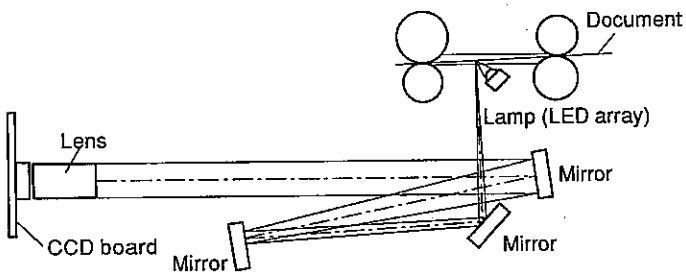


Fig. 6

The optical system is composed of the document feed mechanism, the lamp, the reflecting mirrors, the focusing lens, the CCD sensor, and the read process circuit.

5-1. Lamp

The lamp is used to expose the document.

5-2. Lens

The lens is used to focus the light reflected from the document on the CCD elements.

The focal correction plate is provided to correct for variation in focal distance pertaining to lens manufacturing so that a clear image may always be reproduced on the CCD. The focal correction plate is inserted between the lens holder and the CCD board, and the CCD board is fixed at one of the three positions so that any variation in the focal distance may be corrected. The lens should be mounted with the variation mark facing upward. The table below shows the relationship of variation marks vs. focal correction plate.

Variation mark	Focal correction plate
–	None
0	1 piece
+	2 pieces

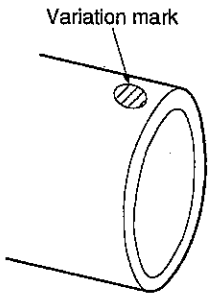
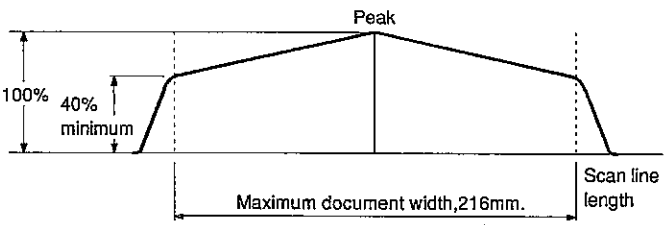


Fig. 7

5-3. CCD

The CCD (charge coupled device) image sensor consists of a photodiode array which converts the intensity of light reflected from the document surface into a series of analog voltages which are then stored in an analog shift register. Series of analog voltages are then converted into a digital equivalent by a black/white binary logic circuit. This circuit automatically selects the optimum slice level according to the white level of a document background.

(Example) Scan signal output waveform



1) The minimum output from the CCD at the maximum scan width of document (216mm) must be more than 40% of the peak value.
2) The peak output must be about 250mV at room temperature to avoid CCD saturation.

[B] PRINT BLOCK

(1) PRINT PROCESS

An OPC drum is used for the photoconductor.

(Structure of the OPC drum layers)

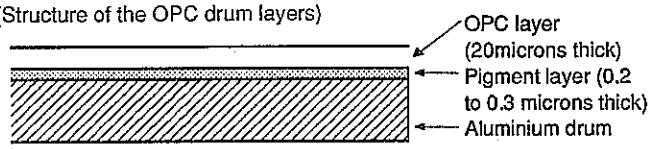


Fig. 9

1. Functional diagram

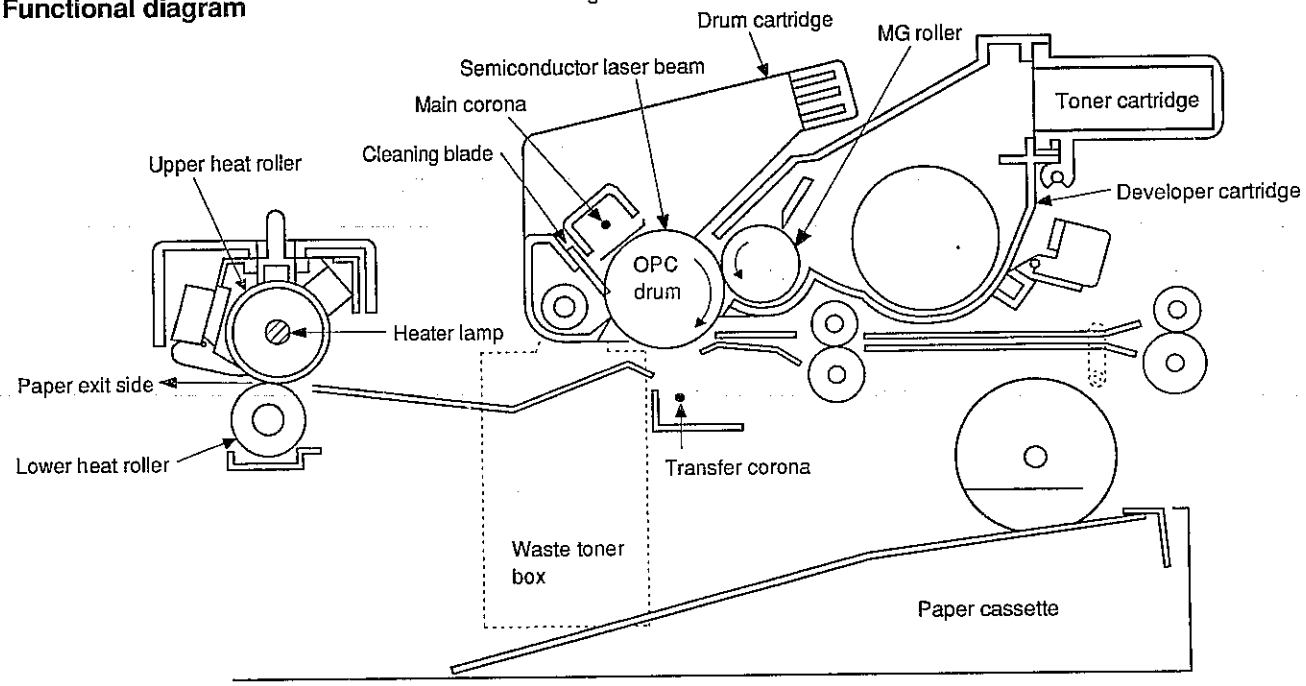


Fig. 10

(Basic operation cycle)

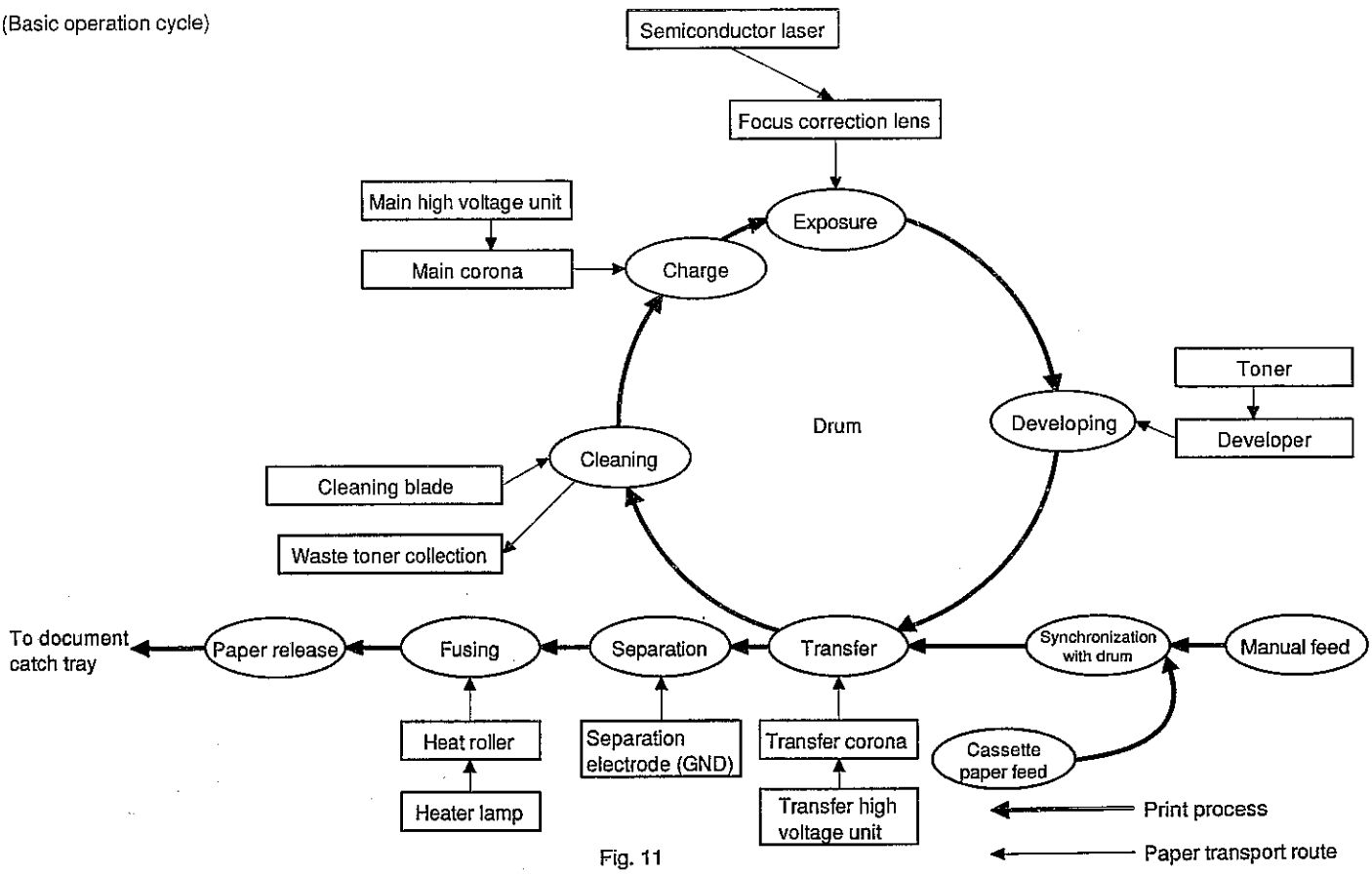


Fig. 11

2. Image forming process steps

The model is a non-impact printer that uses the semiconductor laser and electrostatic print process and uses an OPC (Organic Photo Conductor) for its photoconductive material. First, corona from the main corona unit charges the drum surface and a image latent is formed on the drum surfacing using a laser beam. This latent image forms a visible image on the drum surface with toner. The toned image is then transferred onto the print paper by the transfer corona and fixed on the print paper using the fuser roller, and pressure.

Step-1: Charge

Step-1: Charge
Step-2: Exposure
} Latent image is formed on the drum.

Step-2: Exposure

Step-3: Developing
Latent image formed on the drum is then changed into visible image with toner.

Step-4: Transfer
The visible image (toner image) on the drum is transfered onto the print paper.

Step-5: Cleaning
Residual toner on the drum surface is collected by the cleaning blade.

Step-6: Optical discharge
Residual charge on the drum surface is removed, by semiconductor laser beam.

3. Basic print process

Step-1: DC charge

A uniform negative charge is applied over the OPC drum surface by the main corona unit. Stable potential is maintained by means of the Scorotron charger.
Positive charges are generated in the aluminum layer.

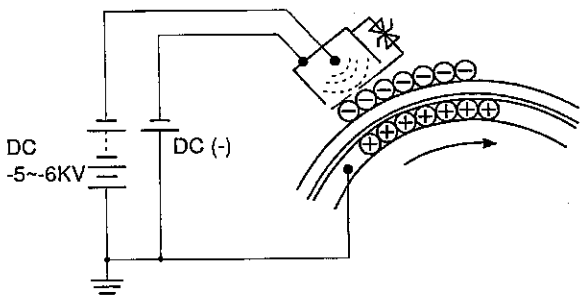


Fig. 12

Step-2: Exposure (laser beam, mirror, lens)

A Laser beam is generated from the semiconductor laser with the print pattern signal. It is exposed onto the OPC drum surface through the mirror and lens. The resistance of the OPC layer decreases for an area exposed by the laser beam (corresponding to the print pattern signal). The beam neutralizes the negative charge. The electrostatic latent image is formed on the drum surface.

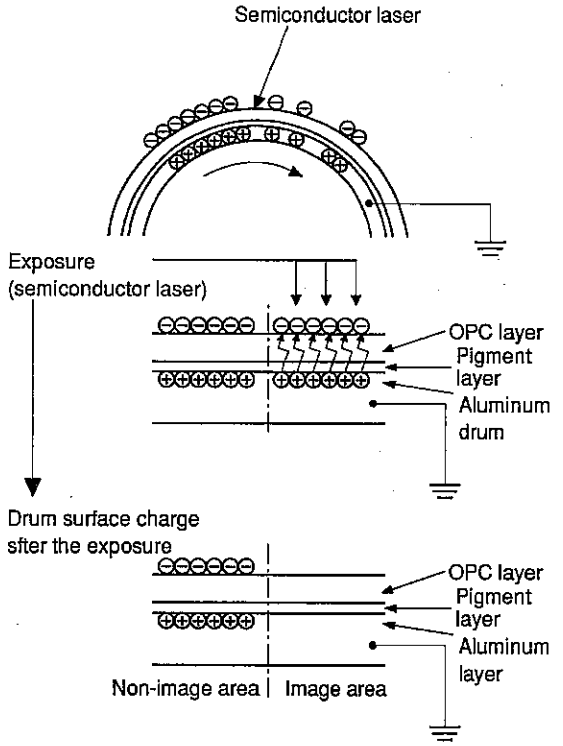


Fig. 13

Step-3: Developing (DC bias)

A bias potential is applied to the MG roller in the two component magnetic brush developing method, and the toner is charged negative through friction with the carrier.

Non-image area of the drum surface charged with negative potential repel the toner, whereas the bright exposed portions where there are no negative charges exist are developed by the toner. As a result, a visible image appears on the drum surface.

A small quantity of carrier is on the sleeve.

⊕ : Carrier (magnetized particle)
● : Toner (charge negative by friction)
(N) (S) : Permanent magnet
(provided in three locations)

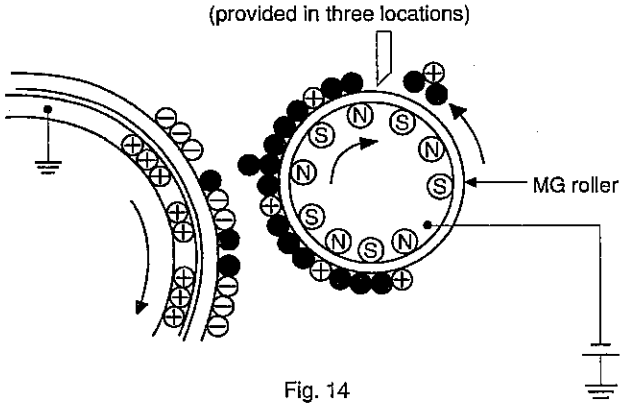


Fig. 14

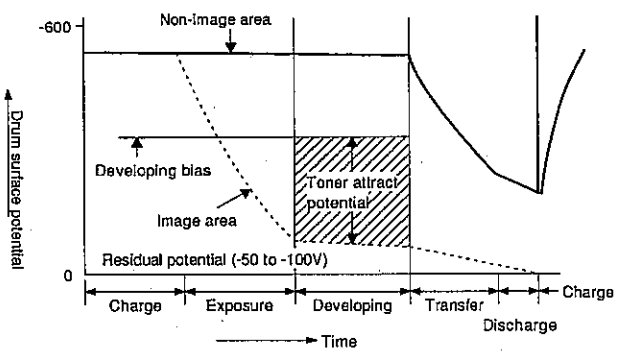


Fig. 15

Toner is attracted over the shadowed area because of the developing bias.

Step-4: Transfer

The visible image on the drum surface is transferred onto the print paper by applying a positive charge from the transfer corona to the back of the print paper.

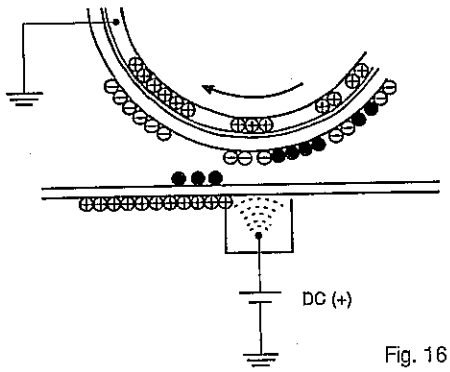


Fig. 16

Step-5: Cleaning

Toner remaining on the drum is collected by the cleaner blade and transported to the waste toner box, by the waste toner transport screw.

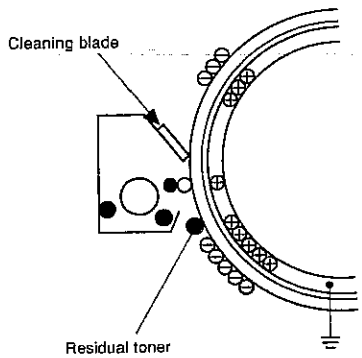


Fig. 17

Step-6: Optical discharge (Semiconductor laser)

Before the drum rotation is stopped, semiconductor laser is radiated onto the drum to reduce the electrical resistance in the OPC layer and elimate residual charge, providing a uniform state to the drum surface.

When the electrical resistance is reduced, positive charges on the aluminum layer are moved and neutralized with negative charges on the OPC layer.

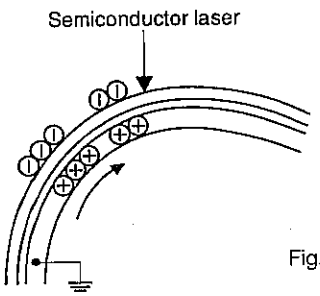


Fig. 18

Charge by the Scorotron charger

Function

The Scorotron charger maintains the surface potential of the drum. It is used to control the surface potential regardless of the charge characteristics of the photoconductor.

Basic function

A screen grid is provided between the corona wire and the photoconductor, a stable voltage is added to the grid to apply the corona current to the photoconductor and the grid.

As the photoconductor is charged by the corona from the main corona unit, the surface potential increases. This increases the current flowing through the screen grid. When the photoconductor potential nears the grid potential, the entire current flows to the grid so the photoconductor potential can be maintained at a stable level.

Process controlling

Function

Print pattern signal is converted into a visible image by the semiconductor laser using negative to positive (reversible) developing method. Therefore, if the developing bias is added before the drum is charged, toner is attracted onto the drum. If the developing bias is not added when the drum is charged, the carrier is attracted to the drum because of the strong electrostatic force of the drum.

To avoid this, the process is controlled by adjusting the drum potential and the grid potential of the Scorotron charger.

Basic function

Voltage added to the screen grid can be selected, high and low.

To make it easily understood, the figure below shows voltage transition at the developer unit.

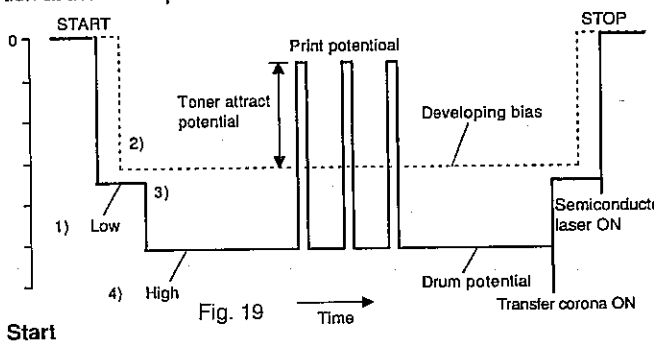


Fig. 19

Start

1) The grid potential and the drum potential is at low level. (Carrier may not be attracted, though the carrier is pulled towards the drum by the electrostatic force.
2) Developing bias is added when the drum potential is at a low level.
3) Even if the developing bias is added, toner deposit will not occur because the bias voltage is higher than the drum potential.
4) After the developing bias is added, the grid voltage changed from low to high, but the toner and developer may not be attracted.

Stop

1) After completion of printing, more than one turn of the OPC drum is uniformly charged at high level.
2) Only the portion uniformly charged at high level is adversely charged to low level by the transfer corona.
3) When the portion discharged by the transfer corona passes the main corona section, the grid voltage is changed over to LOW output.
4) When the LOW grid voltage output area on the OPC drum passes the developer section, the developing bias is turned off.
5) The OPC drum is opticaly discharged more than one turn by the semiconductor laser and is stopped.

Retaining developing bias at an abnormal occurrence

Function

The developing bias will be lost if the power supply is shut off during printing due to a power supply failure. In this event, the drum potential slightly abates and the carrier makes deposits on the drum because of strong static power. To prevent this, the machine incorporates the function to retain the developing bias for a certain period against a possible power supply failure.

Basic function

Normally, the developing bias voltage is retained for a certain time before the drum comes to a complete stop, if the machine should stop before completing the normal print cycle. In this way, the developing bias can be added before resuming the operation after an abnormal interruption. No carrier will therefore make a deposit on the drum surface.

(2) OPERATIONAL DESCRIPTIONS

1. Paper feed block and paper transport block

Fig. 20 shows the cross section of the laser printer.
In this section, the paper transport is described.

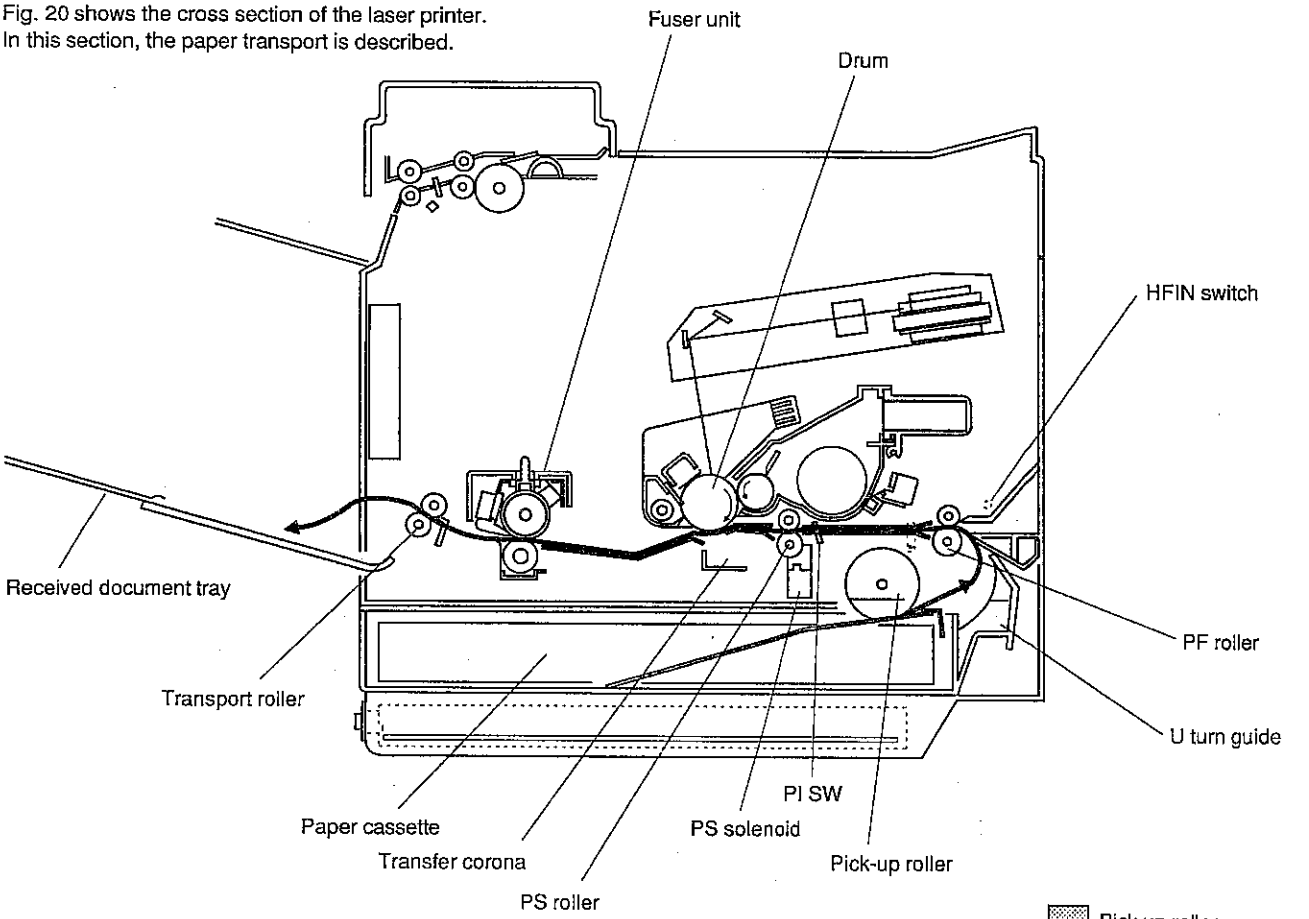


Fig. 20

There are two paper feed systems available: the automatic paper feed and the manual paper feed.

A paper is taken by the pick-up roller ③ from the paper cassette ① and is fed along the U-turn guide ④ to PF roller ⑤. The paper is then fed by PF roller ⑤ along the paper transport path to PS roller ②, where it is stopped to adjust print timing and alignment. Then, PS solenoid ⑬ is pulled to allow PS roller ② to rotate and the paper is fed to the drum ⑧. Images on the Drum ⑧ are transferred to the paper by transfer corona ⑫. The paper with transferred images on it is fed to fuser unit ⑨, where the images are fused.

The fused paper is fed to transport roller ⑪.

When a paper is fed from the manual insertion slot ⑥, HFIN switch ⑦ is turned on, and the paper is fed from PF roller ⑤ in the same manner as above.

More detailed operational descriptions of the blocks are given below:

1-1. Cassette feed

① Fig. 21 and Fig. 22 show positions of the pick up roller, the paper feed clutch sleeve, and the paper feed latch after the ready lamp lights.
The paper feed clutch is in contact with the projection of the clutch sleeve.

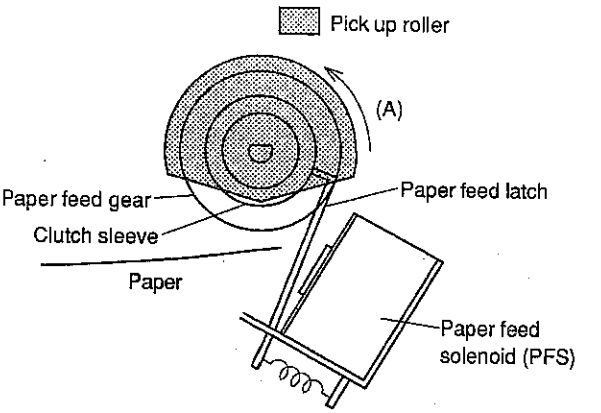


Fig. 21

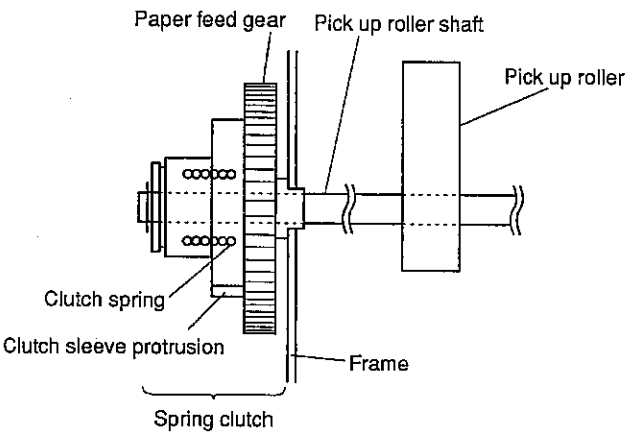


Fig. 22

Note: The paper feed drive gear is a one way clutch. Rotation of the paper feed drive gear is transmitted only in direction (A) shown in Fig. 21.

② When the print command is received, the main drive motor starts to operate each drive gear. The paper feed gear starts to be driven. The rotation of the gear is not conveyed to the paper feed roller shaft and therefore the paper feed roller does not rotate because the paper feed latch is holding the clutch sleeve protrusion.

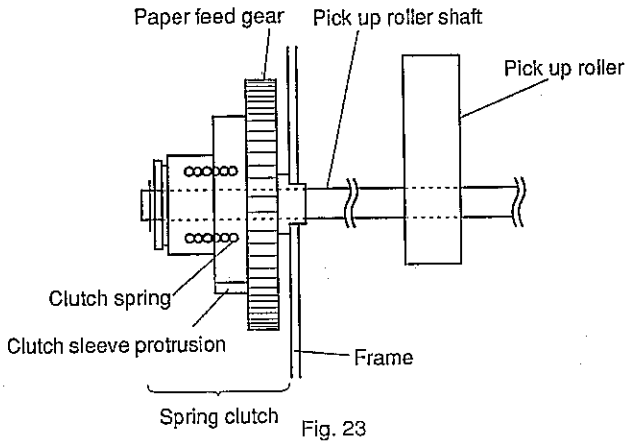


Fig. 23

③ In about 1 second after the start of the main motor, the paper feed solenoid (PFS) actuates momentarily so the paper feed latch disengages from the clutch sleeve protrusion. Then, the rotation of the paper feed gear is conveyed to the paper feed roller shaft so the pick up roller starts rotating to feed the paper.

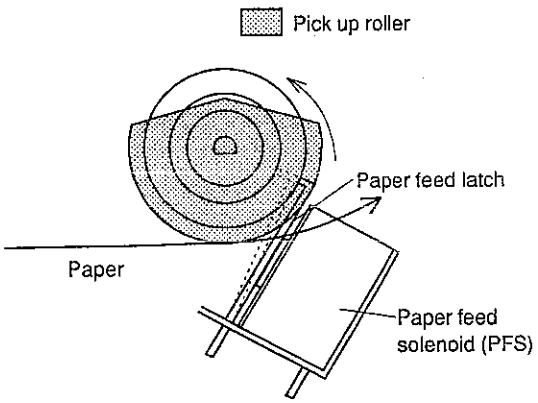


Fig. 24

④ As the pick up roller makes a full turn, the clutch sleeve protrusion is caught by the paper feed latch so that the paper feed roller A stops rotating.

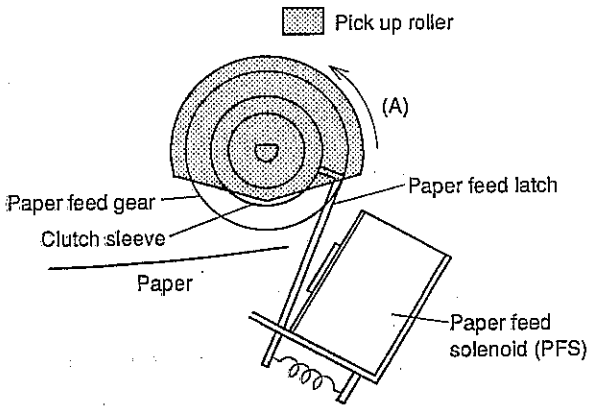


Fig. 25

⑤ The paper fed into the machine is transported to the PS roller through the paper feed roller and the paper entry sensor (PISW). Since the PS solenoid latch is engaged with the PS gear, the PS roller does not rotate and the paper is stopped at the PS roller to make synchronization with the lead edge and images on the drum. Since the paper feed roller continues to rotate, the paper lead edge is evenly pressed against the PS roller to correct a paper feed skew.

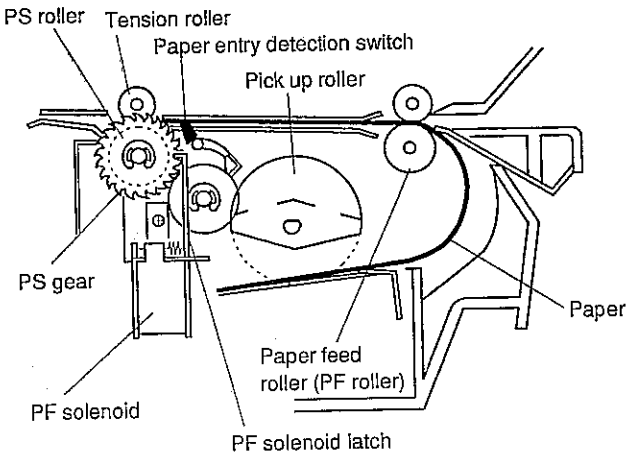


Fig. 26

⑥ Then the PS solenoid is turned on to rotate the PS roller. The paper is transported to the transfer block, where images are transferred on to the paper.

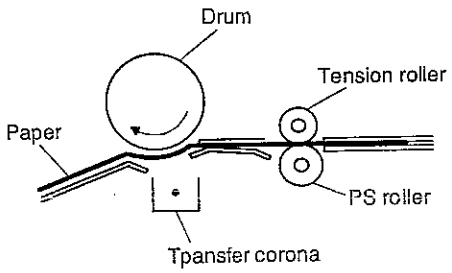


Fig. 27

⑦ The paper is electrostaticly separated from the drum and transported through the fusing paper guide, the upper and lower heat rollers (fusing section), and the POUT switch (paper exit detection).

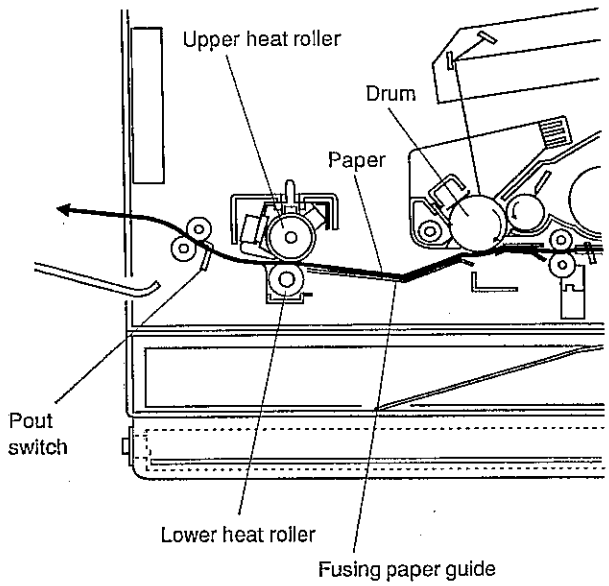
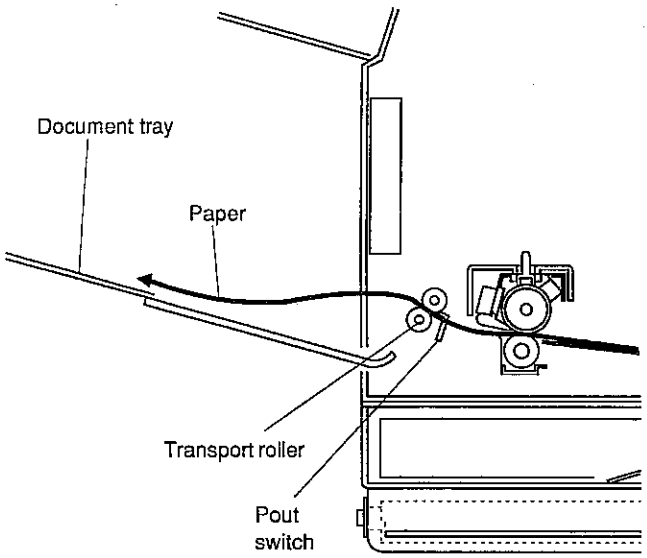


Fig. 28

⑧ After passing through the POUT, the paper is fed out to the document tray.



2. Optical system

The optical system is assembled to the upper frame unit. When replacing the optical system, replace the whole unit.

After every replacement or reassembly, be sure to perform the optical system unit assembly position adjustment.

(1) General description

A laser beam issued from the semiconductor laser diode in synchronization with the video signal is focused collateral by means of the collimator. It is exposed to the polygonal mirror that keeps rotating at a given speed, and the laser beam scans in the main scan direction as the mirror rotates. The main scan laser beam enters the focus correction lens where it is collected and focused to the reflect mirror to reflect the beam on the drum. The point where write starts is the point where the laser beam coming out of the focus correction lens is reflected by the trigger mirror exposes the photodiode.

(2) Major components

Light source	Semiconductor laser diode (780nm wavelength) Laser output control PWB (APC circuit)
Deflector	Polygonal mirror, scan motor, control circuit board
Optics collimator	Focus correction lens, Reflect mirror, Collimator lens
Beam point detector	Pin diode Detect circuit board, Trigger mirror
Panels	Plastic molding housing and sealing cover

(3) Optical system block diagram

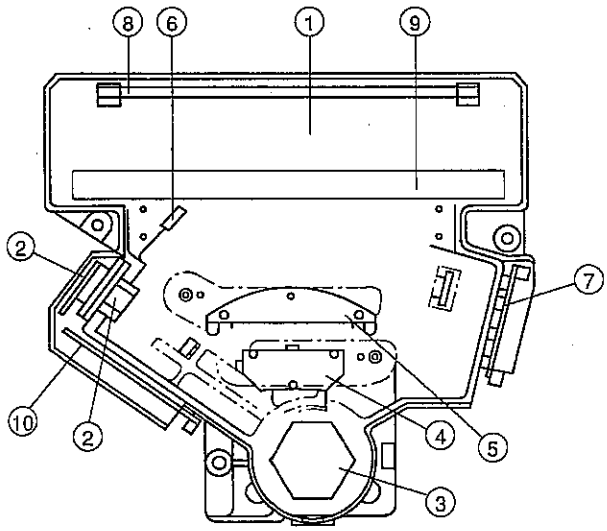


Fig. 30

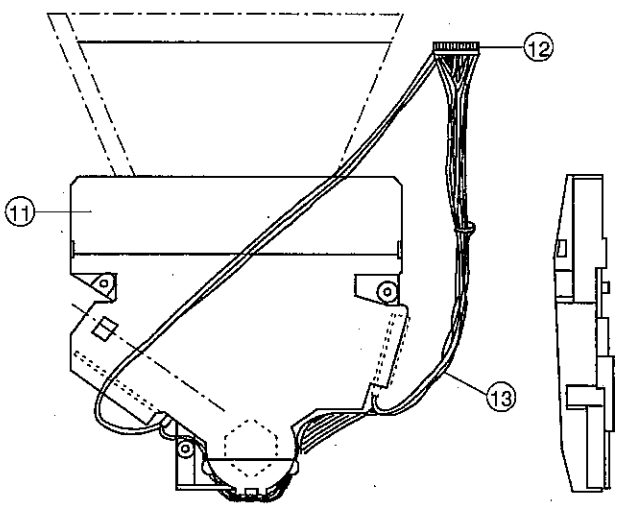


Fig. 31

NOTE: Dont remove the optical system cover.

1. Plastic molding
2. Semiconductor laser diode and collimator lens
3. Polygonal mirror and scan motor
4. Focus correction lens A
5. Focus correction lens B
6. Trigger mirror
7. PIN diode and detect circuit board
8. First reflect mirror
9. Second reflect mirror
10. APC circuit board
11. Sealing cover
12. Connectors
13. Leads

3. FUSER UNIT

1. General description

(Cross sectional view)

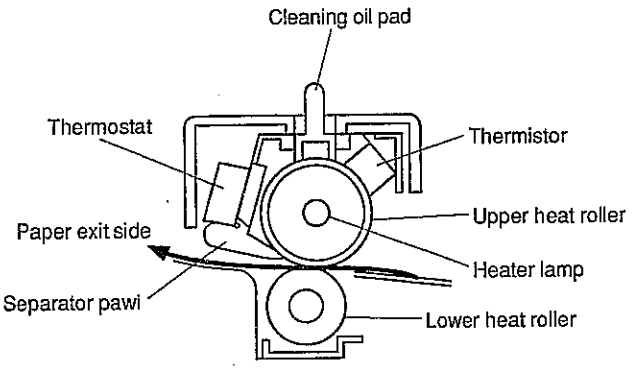


Fig. 32

(Top view)

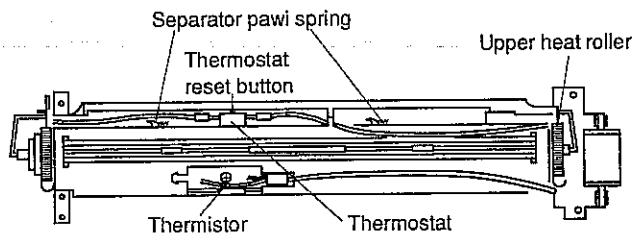


Fig. 33

(1) Heat roller

A teflon roller is used for the upper heat roller and a silicon rubber roller is used for the lower heat roller for better toner fusing performance and paper separation.

When the clamshell is opened, as shown in Fig. 34 the lower heat roller holding angle is pulled in direction (A) by the spring and the lower heat roller moves down in direction (B). In this machine, when the clamshell is opened, the upper and the lower heat rollers are automatically separated for paper removal in the case of a paper jam.

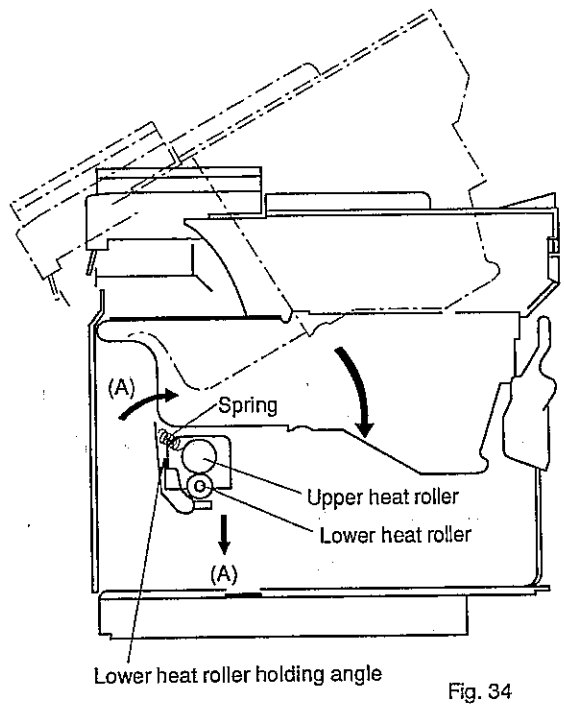


Fig. 34

(2) Cleaning oil pad

For this machine, The cleaning oil pad can be replaced easily.

The cleaning oil pad has the following function.

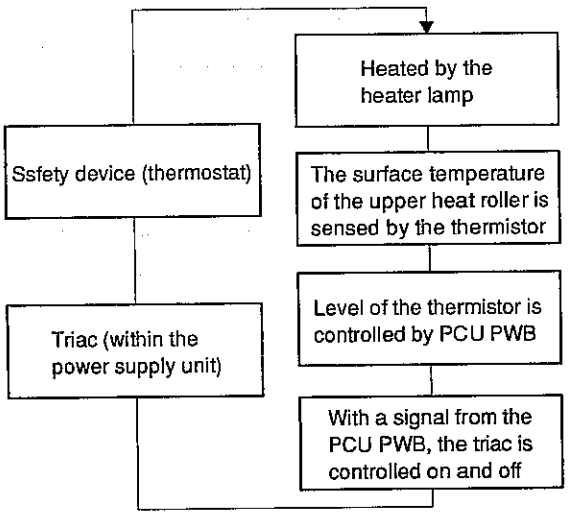
- A small quantity of silicon oil is applied to the upper heat roller to prevent separation pawl wear, remove the lower heat roller dirt, and prevent adhesion of dirt to the upper heat roller.

(3) Separator pawl

Two separator pawls are used on the upper heat roller. The separator pawl is teflon coated to reduce friction with the roller.

(4) Thermal control

① The heater lamp, thermistor, PCU PWB, DC power supply PWB, and triac within the power supply unit are used to control the temperature in the fuser unit.
To prevent excessive high temperature in the fuser unit, a thermostat is used for safety purposes.


Heated by the heater lamp
Ssfety device (thermostat)
The surface temperature of the upper heat roller is sensed by the thermistor
Level of the thermistor is controlled by PCU PWB
Triac (within the power supply unit)
With a signal from the PCU PWB, the triac is controlled on and off

Temperature control flow chart

② The surface temperature of the upper heat roller is set to 165°C (175°C manual feed).

③ The self-check function comes active when one of the following malfunctions is met, and an error is displayed.

a. When the heat roller surface temperature rose above 230 to 250°C, the status "SERVICE (C4)" is displayed.

b. When the heat roller surface temperature dropped below 90 to 100°C during the print cycle, the status "SERVICE (C5)" is displayed.

c. When the thermistor opened, the status "SERVICE (C6)" is displayed.

d. When the thermostat contacts are open due to irregularly high heat roller temperature, the status "SERVICE (C4)" is displayed (*1).

*1: When the thermostat contacts are open, the reset button on the thermostat must be pushed to reset it, as the contacts do not restore automatically.

[2] Disassembly and reassembly procedures

- This section describes mainly the disassembly procedures. For reassembly, reverse the disassembly procedures. [Note for reassembly] is given where special care must be required or special technique is required for reassembly.
- Easy and simple disassembly procedures may be omitted.
- Carefully perform disassembly and reassembly to assure the product reliability.

1. TEL/LIU PWB

a. Remove six screws ① in Fig. 1 and remove rear cabinet ②.

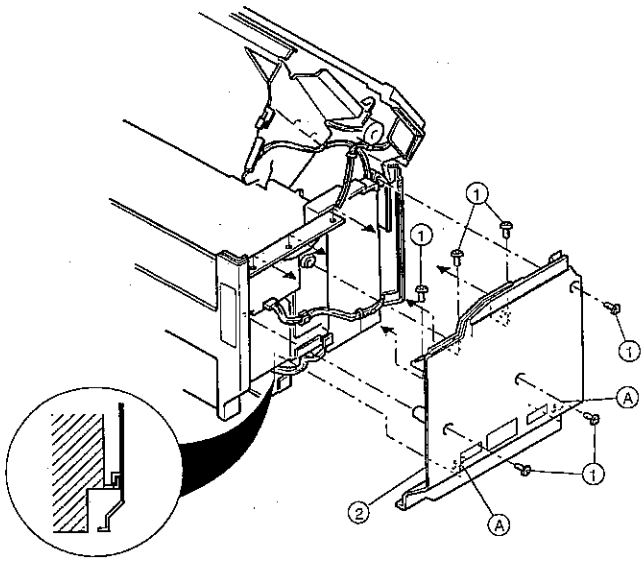


Fig. 1

b. Remove screw ① in Fig. 2, and remove earth wire ②.

c. Disconnect connectors ④ in Fig. 2.

d. Remove TEL/LIU PWB ⑥ from five bushing ⑤ in Fig. 2.

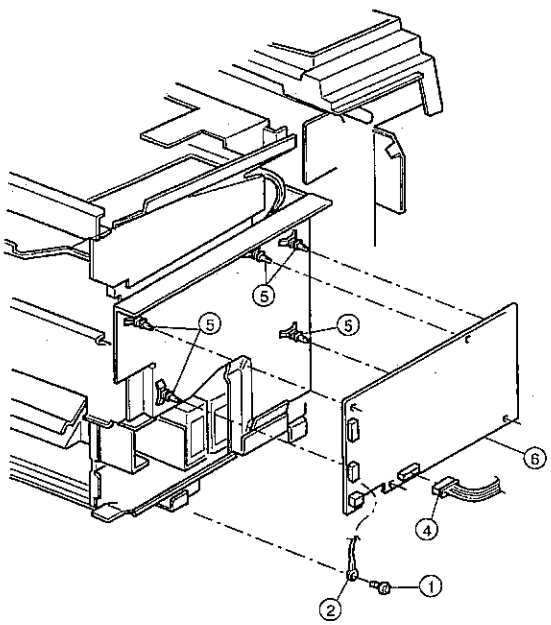


Fig. 2

[Note for reassembly]

- Insert TEL/LIU PWB ⑥ in Fig. 2 securely into five bushings ⑤.
- When fixing rear cabinet ④ in Fig. 1, hang two hooks Ⓐ on the frame. (Refer to the enlarged view in Fig. 1.)

2. Control PWB

a. Remove two screws ① in Fig. 3 and remove PWB cover ②.

b. Disconnect all the connectors of control board ③ in Fig. 3, and remove control board ③ from the frame.

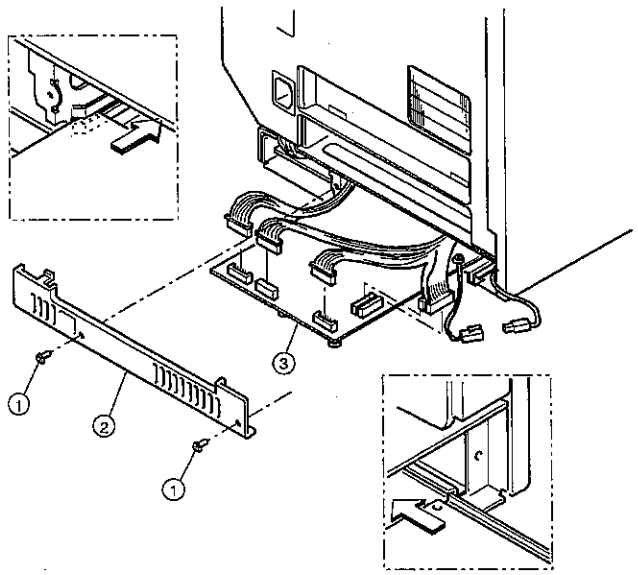


Fig. 3

[Note for reassembly]

- When installing control PWB ③ in Fig. 3 to the frame, be careful to the following:
  1. When inserting the control PWB into the frame, refer to the enlarged view of Fig. 3.
  2. Do not allow the cables to be caught by the PWB.
  3. Push the control PWB firmly to connect with the mother board.

3. AC power unit, DC power unit

a. Remove the TEL/LIU PWB from the PWB mounting plate according to procedures 1-a thru d.

b. Remove five screws ① in Fig. 4, disconnect connectors ② and ③, and remove left cabinet ass'y ④ from the frame.

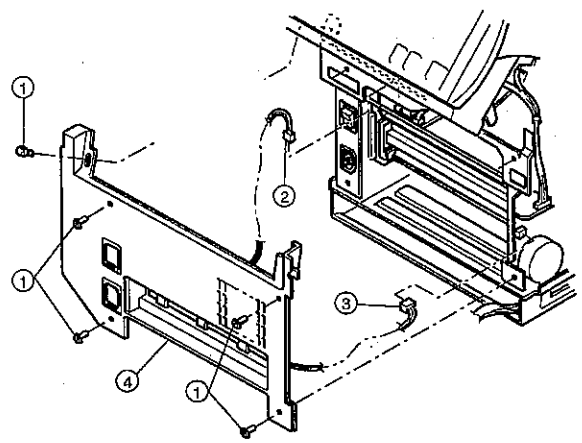


Fig. 4

c. Remove three screws ① in Fig. 5, and remove PWB mounting plate ②.

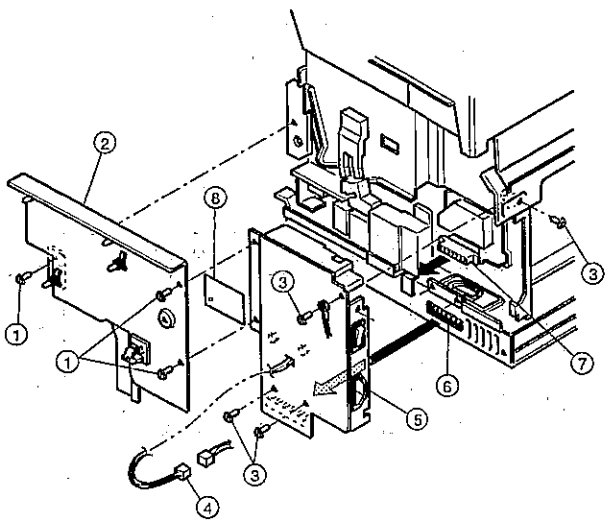


Fig. 5

d. Remove four screws ③ in Fig. 5.

e. Disconnect connector ④ in Fig. 5, and remove AC power unit ⑤.

<Note> The AC power unit is directly connected to DC power unit ⑥ and connector ⑦. Therefore, pull it out straight when removing.

f. Disconnect connectors ① and ② in Fig. 6, and pull out DC power unit ③ from main frame ④.

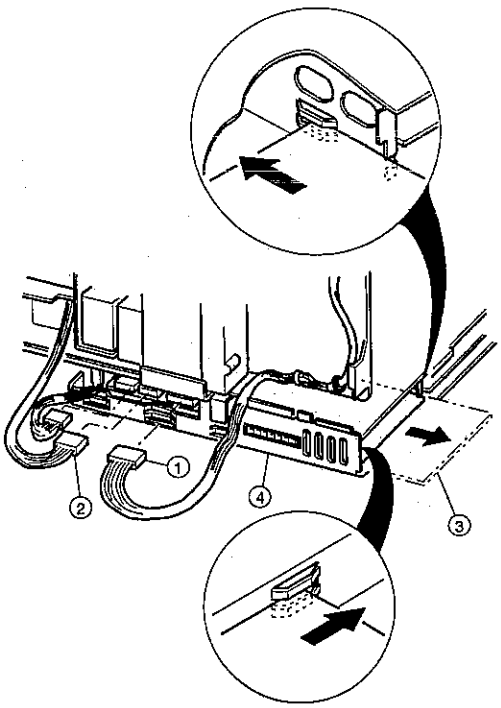


Fig. 6

[Note for reassembly]

- When inserting DC power unit ③ into main frame ④ in Fig. 6, be careful to the following:
  1. Do not catch the cables with the DC power unit.
  2. Insert the PWB section of the DC power unit into the main frame PWB guide. (Refer to the enlarged view of Fig. 6.)
  3. Securely insert the power PWB and check that all the connectors are properly connected.
- When installing AC power unit ⑤ to the main frame, be careful to the following:
  1. Connect the AC power unit with DC power unit ⑥ and connector ⑦ in Fig. 5 so as not to bend the connector pins.

The disassembly and reassembly procedures of the mechanical unit section are described in the following. Descriptions are started from the state where the front cabinet, rear cabinet, right cabinet, and left cabinet are removed from the handset holder. For their removing procedures, refer to 1 thru 3.

4. Operation Panel, Document guide upper ass'y

a. Disconnect all the connectors and grounding cables of operation panel ① (with document guide upper ass'y) in Fig. 7.

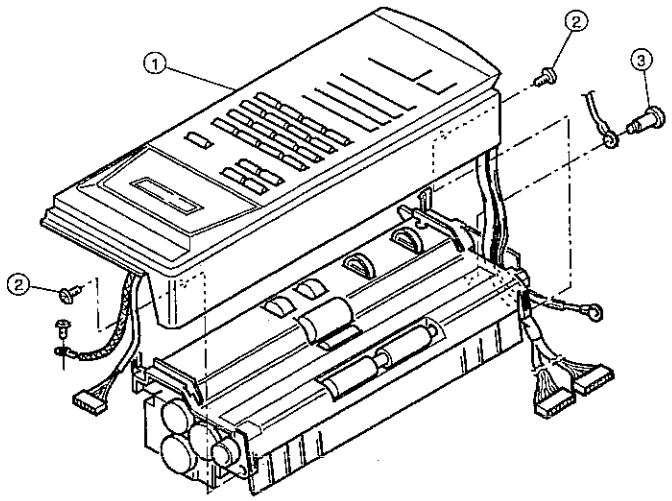


Fig. 7

b. Remove two step screws ② and step screw ③ in Fig. 7, and remove operation panel ① (with document guide upper ass'y).

c. Remove four screws ① in Fig. 8, and remove document guide upper ass'y ② from the operation panel ③.

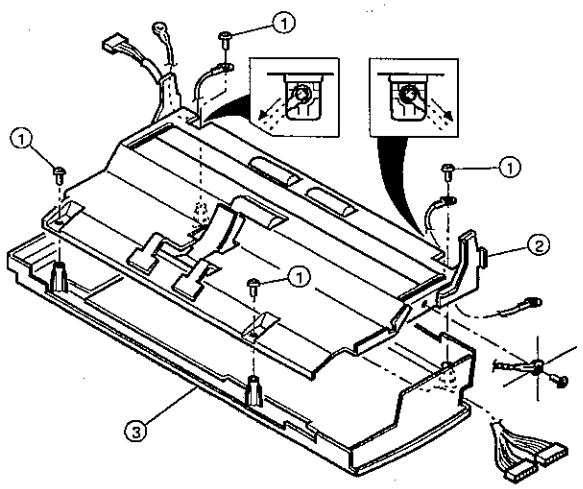


Fig. 8

d. For disassembly of document guide upper ass'y ② in Fig. 8, refer to Fig. 9.

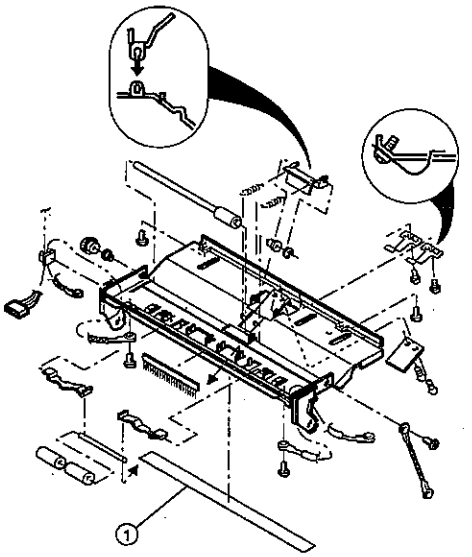


Fig. 9

e. For disassembly and assembly of the operation panel, refer to Fig. 10.

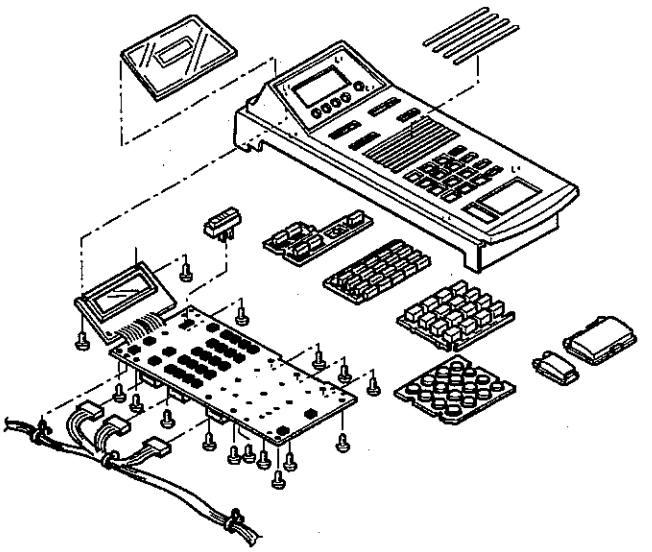


Fig. 10

[Note for reassembly]

- Before tightening document guide upper ass'y ② in Fig. 8 to the operation section with screws, check that rear surface sheet ① in Fig. 9 is clean. If it is dirty, wipe with a cloth.
- For wiring treatment of the operation panel, refer to Fig. 11.

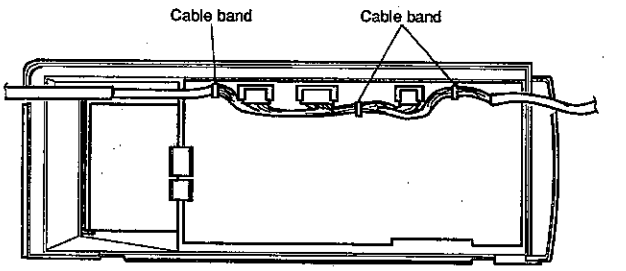


Fig. 11

5. Lamp, document sensor

a. Remove the operation panel (with document guide upper ass'y) from the optical system frame according to procedures 4-a through 4-c.

b. Remove connector ① in Fig. 12.

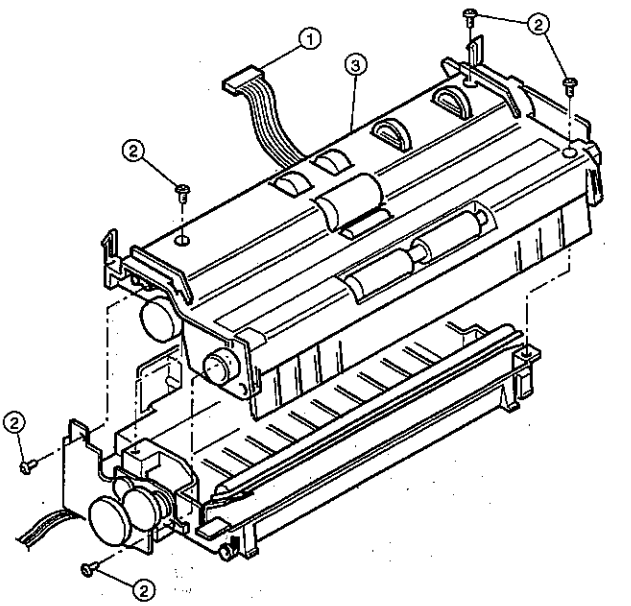


Fig. 12

c. Remove five screws ② in Fig. 12, and remove document guide lower ass'y ③.

d. For disassembly of the document guide lower ass'y, refer to Fig. 13.

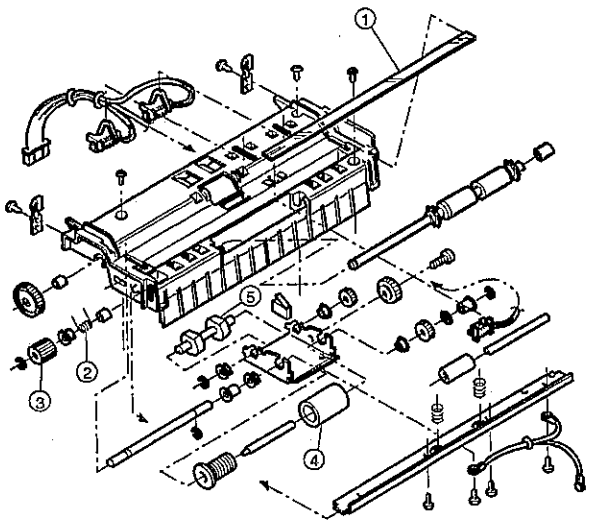


Fig. 13

[Note for reassembly]

- For installing direction of the rollers and gears in document guide lower ass'y ③ in Fig. 12, refer to Fig. 13.
- Before assembling document guide lower ass'y ③ to the optical system frame, check the following items:
  1. Check that cover glass ① in Fig. 13 is free from dirt.
  2. Check that the mirror in the optical system frame is free from dust.
  3. Check that the lens in the optical system frame is free from dirt.
  4. Attach grounding spring ② in Fig. 13 so that the longer lead of the spring comes inside (under the document guide). (Refer to Fig. 14.)
  5. Attach transport roller drive gear ③ in Fig. 13 so that the character side of the gear comes outside.
  6. When installing document guide lower ass'y ③ in Fig. 12 to the optical system frame, check that grounding spring ② in Fig. 13 is as shown in Fig. 14.

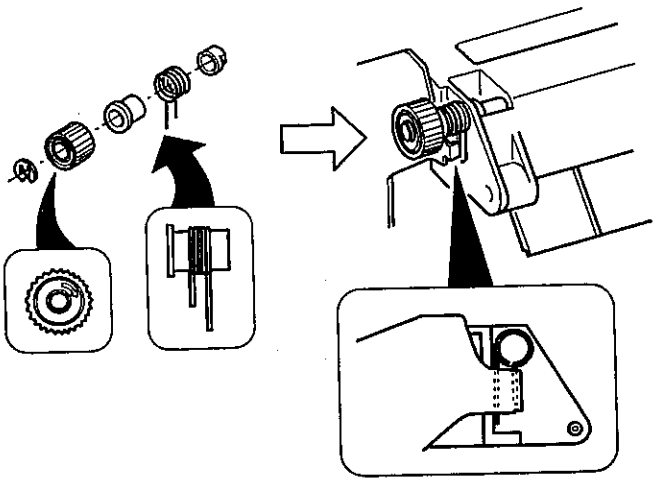
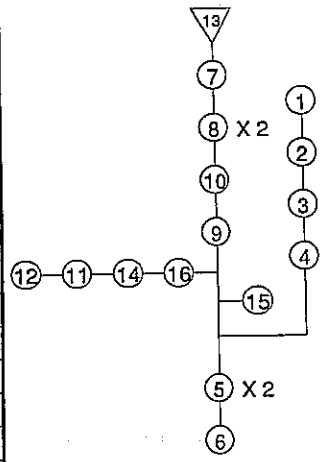


Fig. 14

- When installing paper feed roller ④ and takeup roller ⑤ in Fig. 13, refer to Fig. 15 and the flow chart.

Flow chart

No.	Part name
1	Paper feed clutch
2	Paper feed roller shaft 1
3	Paper feed roller shaft 2
4	Paper feed roller
5	Paper feed roller bearing 2
6	ADF paper feed gear
7	Takeup roller
8	Takeup roller bearing
9	ADF takeup gear
10	E ring (E3)
11	Torque limit gear 35Z
12	Step screw (3 x 16)
13	Roller mounting angle
14	Gear spring
15	Roller switch
16	Washer



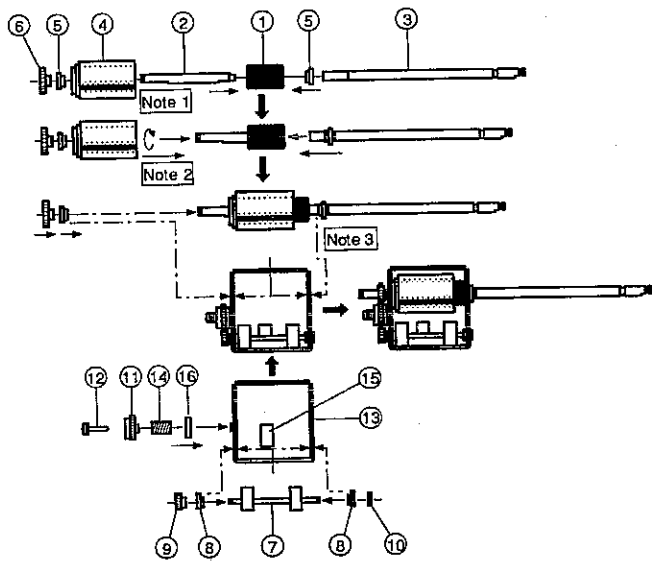


Fig. 15

[Note 1] Be sure to insert the shaft until it clicks.

[Note 2] While rotating it to loosen the paper feed spring, insert it fully to the end.

[Note 3] Be careful so that the paper feed spring may not be caught in the clearance of the paper feed clutch or the paper feed roller.

- For wiring treatment of the document guide lower ass'y, refer to Fig. 16

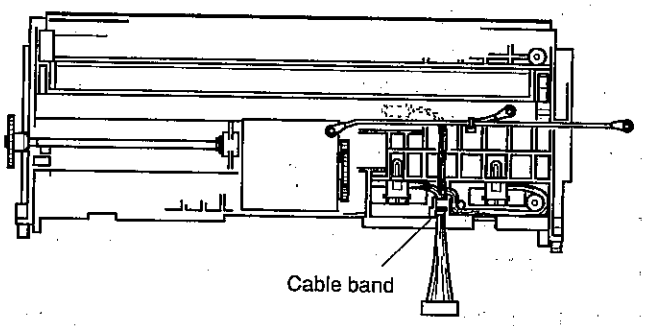


Fig. 16

6. Mirror, lamp, etc.

a. Remove the operation panel (with document guide upper ass'y) from the optical system frame according to procedures 4-a through 4-c.

b. Remove the document guide lower ass'y from the optical system frame according to procedures 5-b and c.

c. Remove two screws ① in Fig. 17, and remove grounding cable ② and transmission motor ass'y ③.

d. Remove connector ④ in Fig. 17.

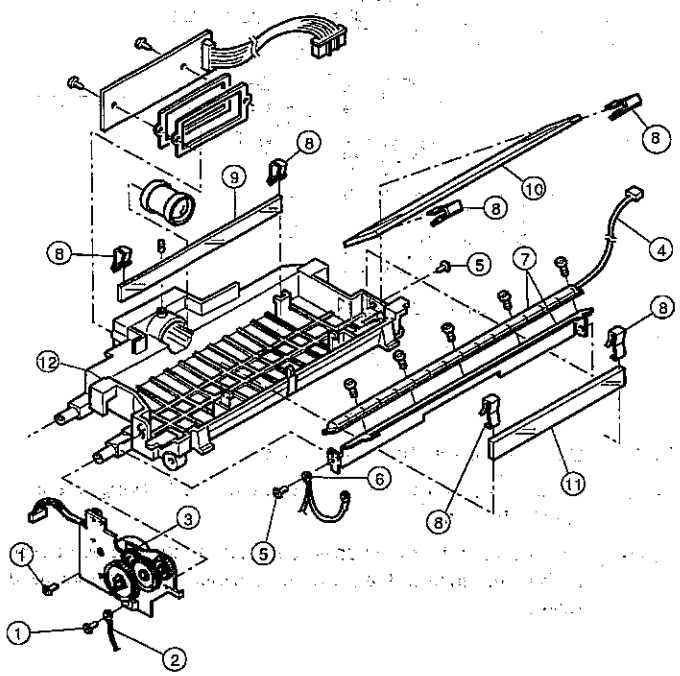


Fig. 17

e. Remove two screws ⑤ in Fig. 17, and remove grounding cable ⑥, and lamp ass'y ⑦.

f. Remove connectors ① and ② in Fig. 18.

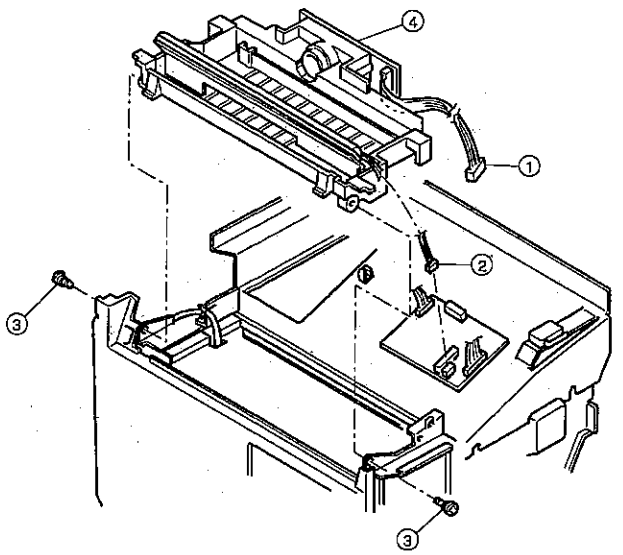


Fig. 18

g. Remove two step screws ③ in Fig. 18, and remove optical system frame ④ from the upper frame.

h. Remove six mirror springs ⑧ in Fig. 17, and remove mirrors ⑨, ⑩, and ⑪.

i. For disassembly of transmission motor ass'y ③ in Fig. 17, refer to Fig. 19.

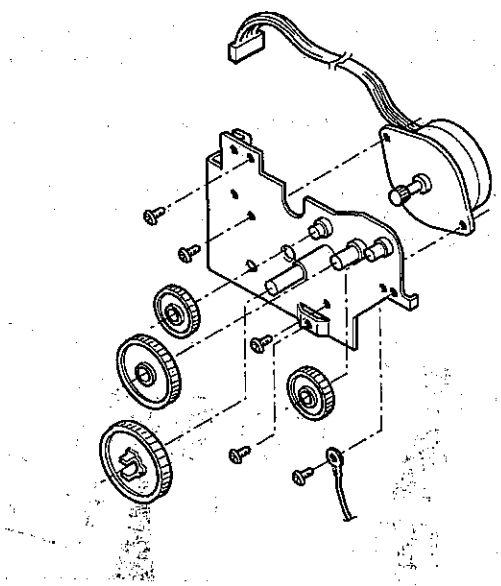


Fig. 19

[Note for assembly]

- For installing direction of the transmission motor and the gears, refer to Fig 20. Note that the cable extends from the transmission motor.

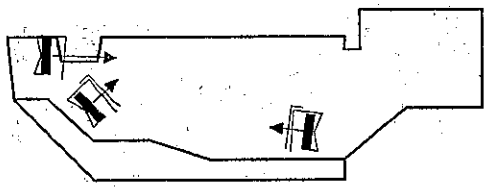


Fig. 20

- When assembling mirrors ⑨, ⑩, and ⑪ in Fig. 17 to optical system frame ⑫, be careful to the following items:
  1. The mirror surfaces are as shown by the arrows in Fig. 20.
  2. Be careful not to scratch the mirrors.
  3. Firmly attach mirror spring ⑧ in Fig. 17 to the mirror, and fix the mirror spring with screw lock.
  4. Check that the mirrors are free from dust and dirt. If necessary, clean them with a dry cloth.

7. Optical system unit

a. Remove screw ① in Fig. 21, and remove grounding wire ②.

b. Remove screw ③ in Fig. 21, and remove grounding wire ④.

c. Remove all the connectors that are connected to scanner unit ⑤ in Fig. 21.

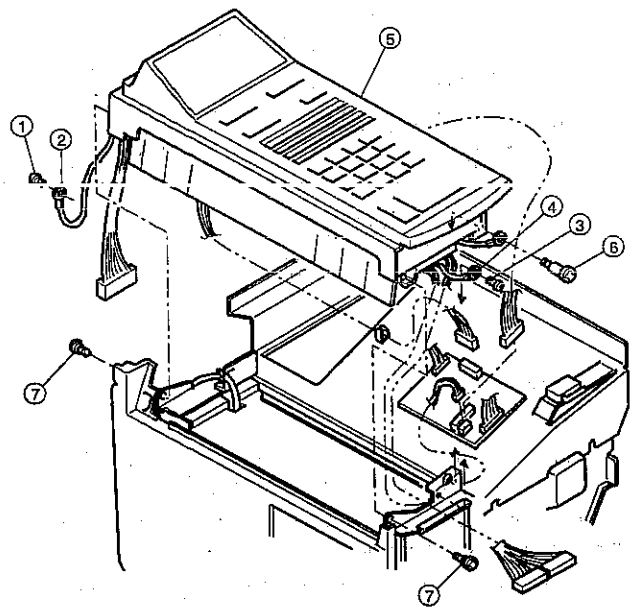


Fig. 21

d. Remove step screw ⑥ and two step screws ⑦ in Fig. 21, and remove scanner unit ⑤.

e. Remove all the connectors that are connected to the main control PWB, the mother PWB, or the lighting PWB.

f. Remove four screws ① in Fig. 22, and remove upper cabinet holding plate ②.

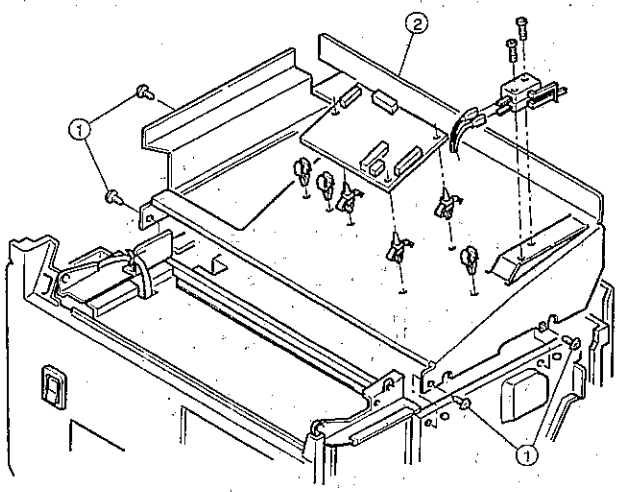


Fig. 22

g. Remove connector ① in Fig. 23 from interface PWB ②.

h. Remove three screws ③ in Fig. 23, and remove optical system unit ④.

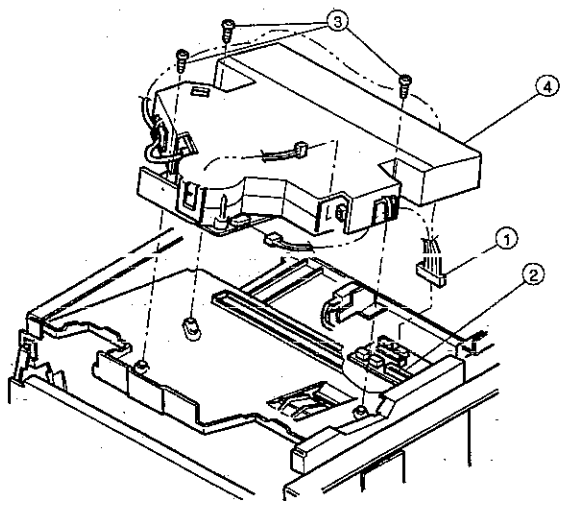


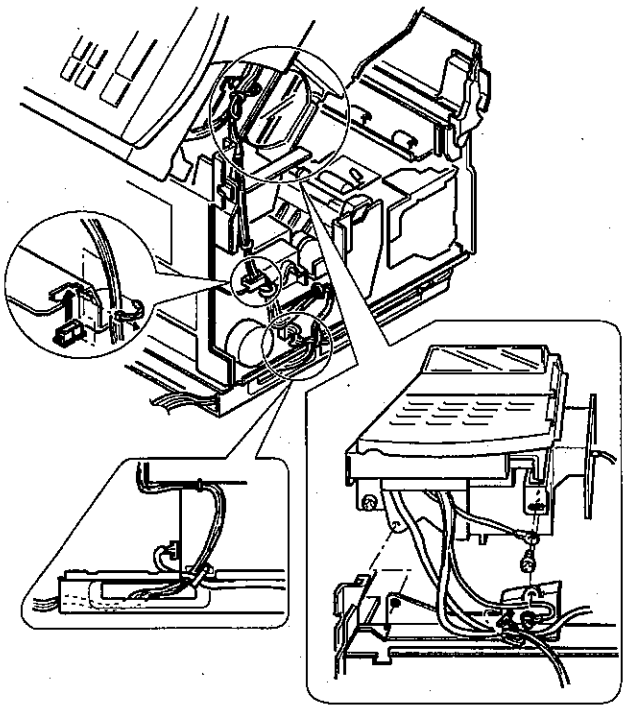
Fig. 23

<Note> Never disassemble the optical system frame.

8. Wire treatment (Front and rear frame sections)

a. For wire treatment of the front and the rear frame sections, refer to Fig. 24.

<Front frame section>



<Rear frame section>

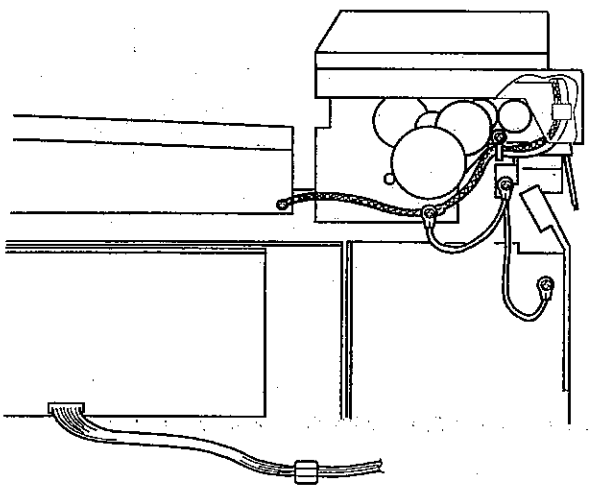


Fig. 24

9. Paper guides A, B

a. Remove the scanner unit from the upper frame according to procedures 7-a thru g.

b. Disconnect connector ① in Fig. 25.

c. Remove two tension springs ② in Fig. 25.

d. Remove two screws ③ in Fig. 25, and remove paper guide C ass'y ④ and paper guide B ass'y ⑤ from the upper frame.

<Note> When removing paper guides C and B, never touch the drum.

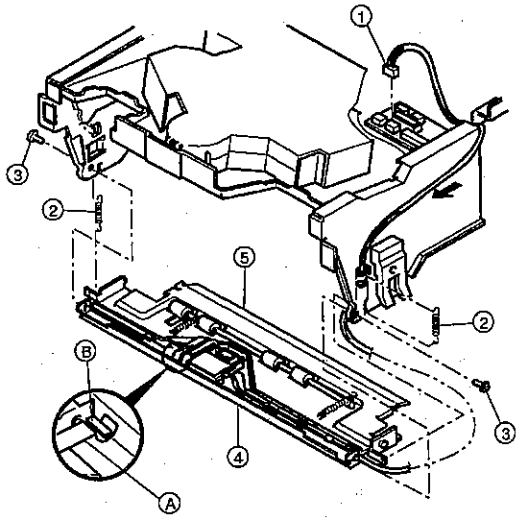


Fig. 25

e. For disassembly of paper guide C ass'y ④ and paper guide B ass'y ⑤ in Fig. 25, refer to Fig. 26.

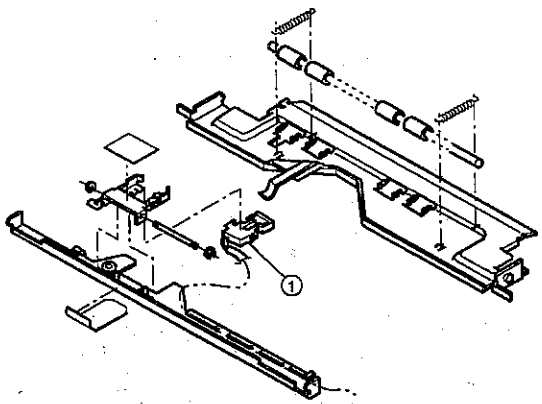


Fig. 26

[Note for reassembly]

- Never touch the drum.
- For wiring treatment of toner sensor ① in Fig. 26, put the cables under the paper guide C angle. (Refer to Fig. 26.)
- When installing paper guide C ass'y ④ and paper guide B ass'y ⑤ in Fig. 25 to the upper frame, be careful to the following.
  1. Hook Ⓐ in Fig. 25 must be installed under the sensor plate Ⓑ.
  2. After installing, push paper guide B ass'y upward to check that it moves smoothly up and down.

10. Lock pawl holding plate ass'y

a. Remove the TEL/LIU PWB from the PWB mounting plate according to procedures 1-a thru c.

b. Remove three screws ① in Fig. 27, and remove PWB mounting plate ②.

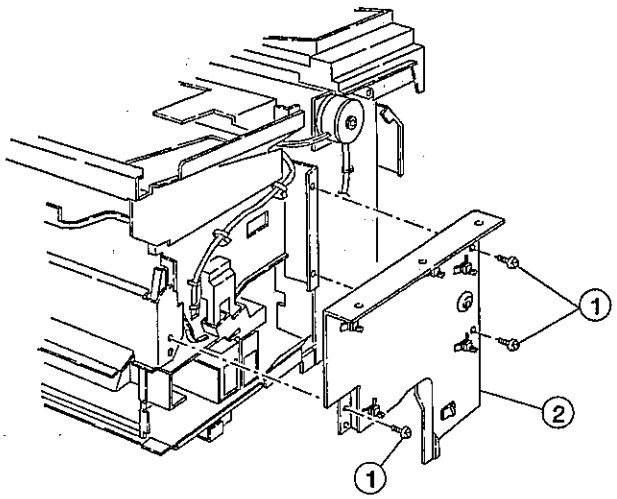


Fig. 27

c. Remove four screws ① in Fig. 28, and remove lock pawl holding plate ass'y ②.

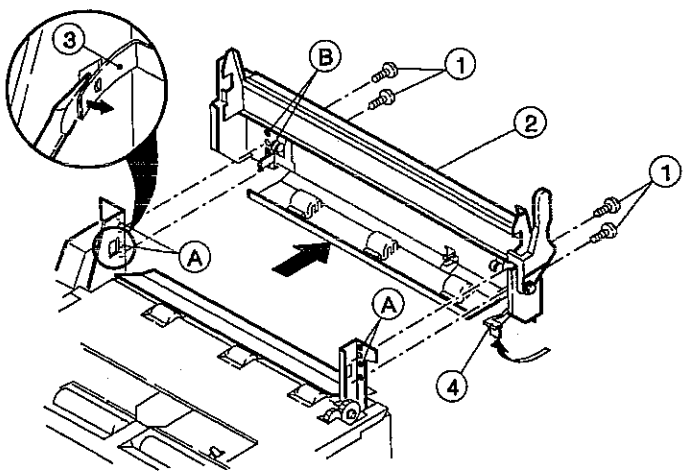


Fig. 28

<How to remove>

1. Refer to the enlarged view of Fig. 28.
2. Lift the actuator and hold it up.
3. Insert a screwdriver between DSD spring and the frame to remove the lock pawl holding plate ass'y in direction of the arrow.

d. For disassembly of lock pawl holding plate ass'y ② in Fig. 28, refer to Fig. 29.

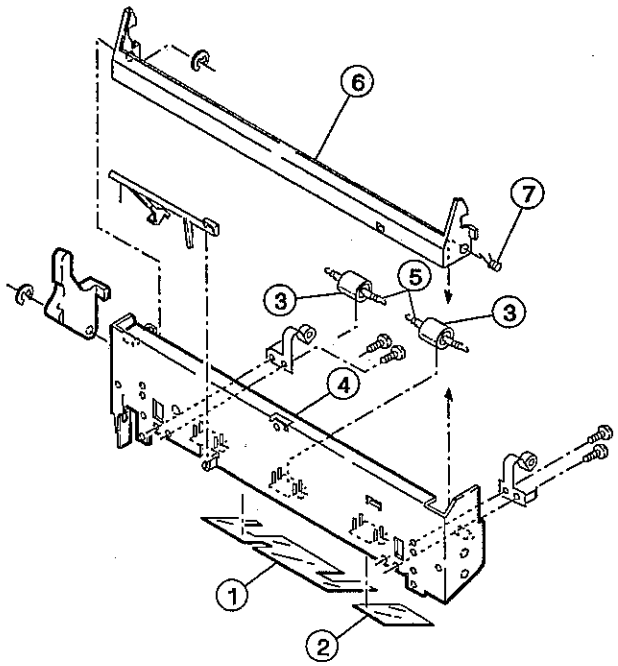


Fig. 29

[Note for reassembly]

- Attachment reference for lock holding mylar C ① and lock holding mylar B ② in Fig. 29 is as shown in Fig. 30.

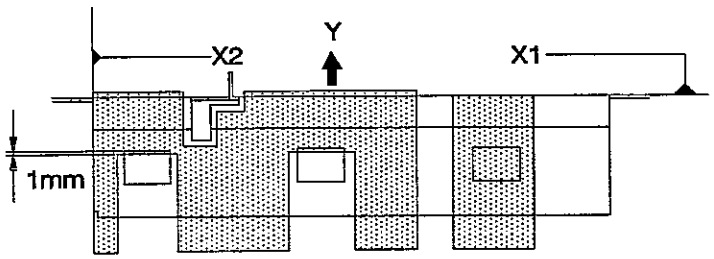


Fig. 30

① Lock holding mylar C --- With x1 as the reference, attach the mylar so as to cover the hole of pressing roller.

② Lock holding mylar B --- Attach with x1 and X2 as the reference.

* Mylars ① and ② may be attached so as to exceed in Y direction as shown in Fig. 30.

- When installing pressure roller ③ in Fig. 29 to lock pawl holding plate ④, be careful to the following.

1. Apply Morikoat (white grease) to inside the pressure roller (the shaded section in Fig. 31). Do not apply, however, to the circumference of the roller.

Fig. 31

2. When attaching pressure spring ⑤ in Fig. 29 to the pressure roller and installing to the lock pawl holding plate, face the hook of the pressure spring upwards. (Refer to Fig. 31.)

3. After installing, move the pressure roller up and down to check the pressure spring hook does not come off.

- When installing lock pawl ⑥ in Fig. 29 to lock pawl holding plate ④, be careful to the following.

1. Check that section Ⓐ of the lock pawl in Fig. 29 is as in Fig. 32.

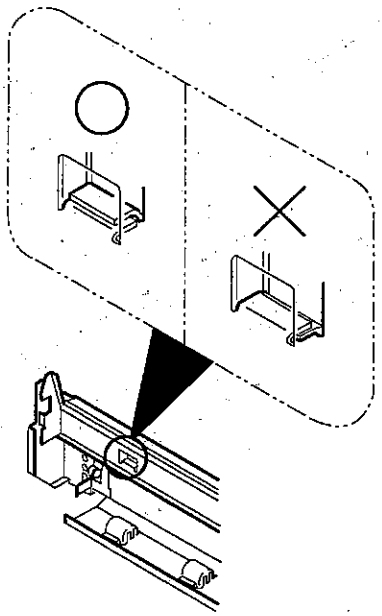


Fig. 32

2. When installing lock pawl spring ⑦ in Fig. 29, refer to Fig. 33. Put lock pawl spring ⑦ in the grooves (2 positions).

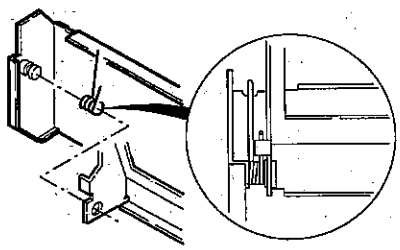


Fig. 33

- When installing lock pawl holding plate ass'y ② in Fig. 28 to the lower frame, be careful to the following.

1. Do not hang pin actuator ③ in Fig.28 on the angles.
2. Put four positioning bosses Ⓐ in Fig. 28 into four holes Ⓑ of the lock pawl holding plate ass'y.

11. Solenoid PWB

a. Disconnect connector ① in Fig. 34.

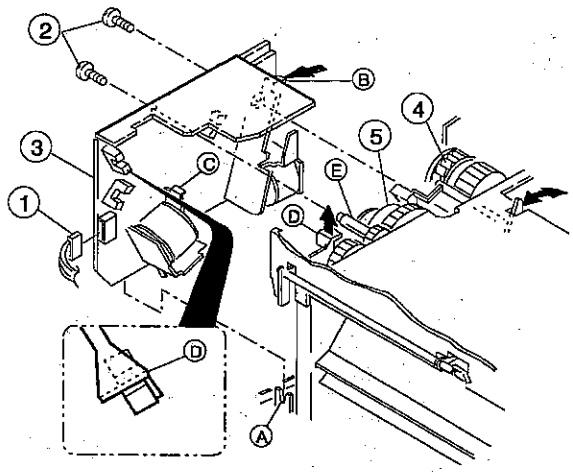


Fig. 34

b. Remove two screws ② in Fig. 34, and remove solenoid PWB ③ from the lower frame.

<Note> When removing the solenoid PWB, be careful not to pull the actuators.

[Note for reassembly]

- When installing solenoid PWB ③ in Fig. 34 to the lower frame, follow the following procedures.

1. Insert the PWB section into groove Ⓐ in Fig. 34.
2. Set pawl Ⓑ (solenoid) in Fig. 34 to PS sleeve ④, and set pawl Ⓒ (solenoid) in Fig. 34 to CI sleeve ⑤.
3. Check that actuator Ⓓ in Fig. 34 is as shown in the enlarged view of Fig. 34.
4. Insert boss Ⓔ in Fig. 34 into the PWB and fix it with screws.

12. paper feed unit

a. Remove the TEL/LIU PWB from the PWB mounting plate according to procedures 1-a thru c.

b. Remove the PWB mounting plate from the lower frame according to procedure 10-b.

c. Remove the lock pawl holding plate ass'y from the lower frame according to procedure 10-c.

d. Disconnect connector ① in Fig. 35.

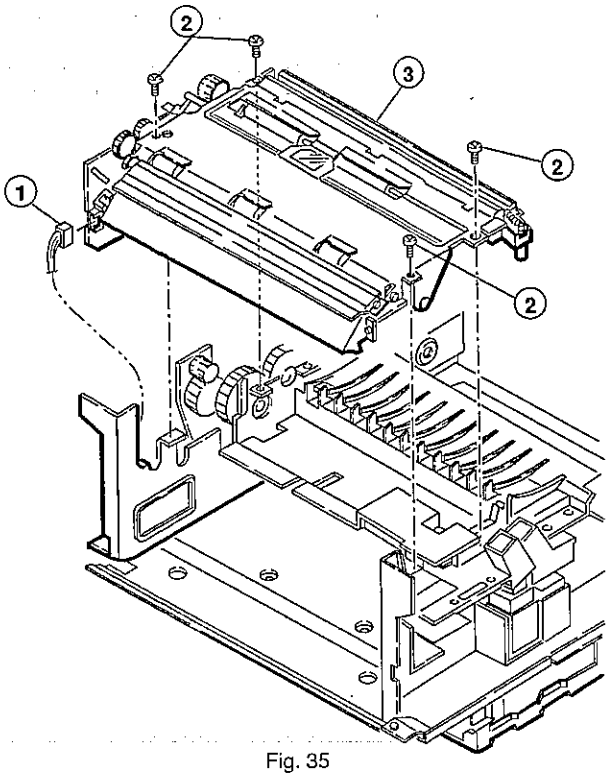


Fig. 35

e. Remove four screws ② in Fig. 35 and remove paper feed unit ③ (with the solenoid PWB).

Then the disassembly and reassembly procedures of the paper feed unit are described. The descriptions start with the state where the paper feed unit is removed from the lower frame. For removing the paper feed unit from the lower frame, refer to procedures 12-a thru e.

13. Transfer corona

a. Loosen two screws ① in Fig. 36 and remove transfer corona ass'y ② from paper feed unit ③.

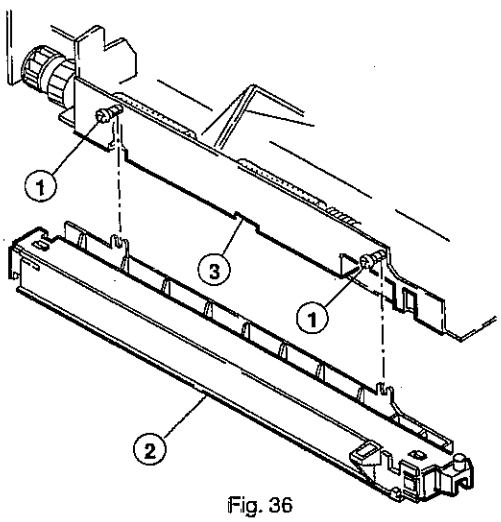


Fig. 36

b. Remove two screws ① in Fig. 37, and remove corona wire ② and corona spring ③.

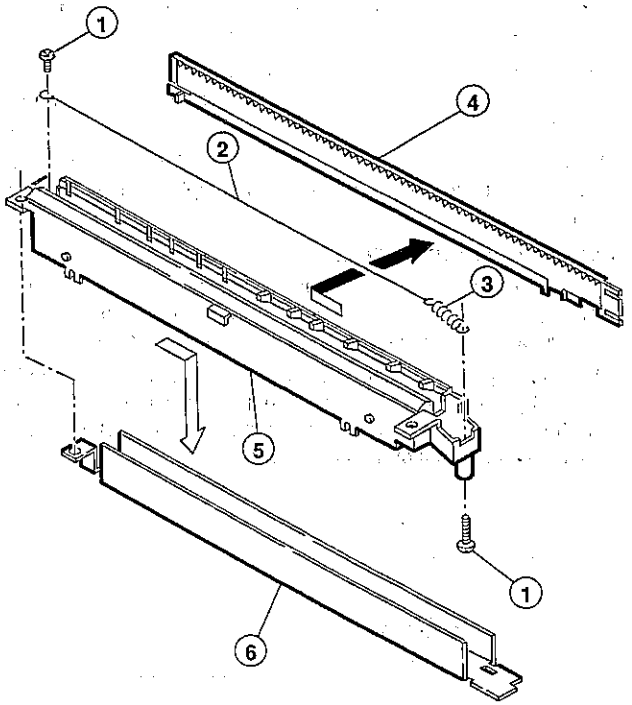


Fig. 37

c. Remove separation guide ass'y ④ (with mylar) in Fig. 37 from transfer corona case A ⑤.

[How to remove]
Refer to Fig. 38. Remove separation guide ass'y from hook Ⓐ in Fig. 38. While pushing the boss of separation guide ass'y Ⓑ in the direction of arrow, push the separation guide ass'y in the direction of arrow and remove it from pawls Ⓒ, Ⓓ, and Ⓔ.

d. Remove transfer corona case B ⑥ in Fig. 37 from transfer corona case A ⑤ in the direction of arrow.

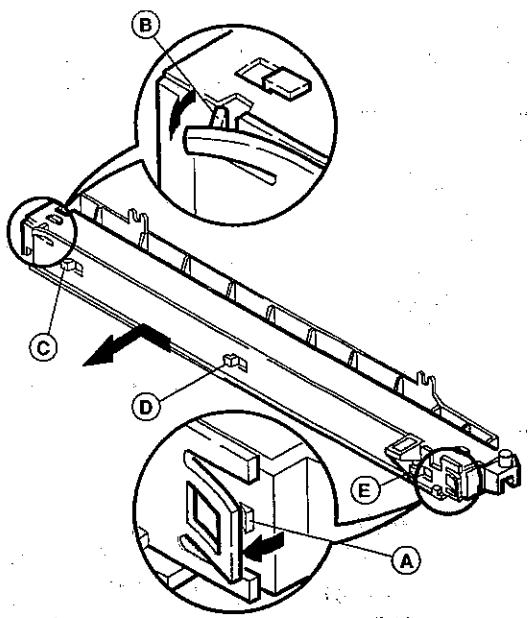


Fig. 38

[Note for reassembly]

- When installing separation guide ass'y ④ in Fig. 37 to transfer corona case A ⑤, refer to Fig. 38. After installing, check that hook Ⓐ, boss Ⓑ, Ⓒ, and Ⓓ are as shown in Fig. 38.
- When installing transfer corona case B ⑥ in Fig. 37 to transfer corona case A, firmly insert transfer corona case B ⑥ under the two pawls Ⓐ in Fig. 37.
- When installing transfer corona ass'y ② in Fig. 36 to paper feed unit ③, insert pawl Ⓐ in Fig. 36 into the angle section of the paper feed unit.

<Corona wire replacement>

a. Remove the transfer corona ass'y from the paper feed unit according to procedures 13-a and b. The remove the corona wire and the corona spring from the transfer corona ass'y.

b. Refer to Fig. 39. Wind the corona wire 5 or 6 turns around the shorter hook of the corona spring in the direction of A as shown in Fig. 39. Then wind it 2 or 3 turns in the direction of B as shown in .Fig. 39. Cut the rest of the corona wire.

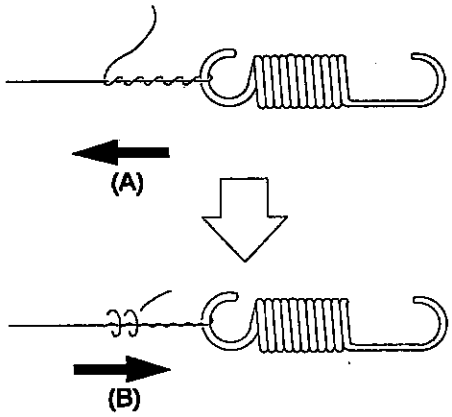


Fig. 39

c. Hang corona spring ① (with the corona wire) in Fig. 40 on screws ②.

d. Temporarily fix transfer corona ass'y ④ with screw ③ in Fig. 40.

e. Refer to the enlarged view of Fig. 40. make a ring with the corona wire and attach it to screw ③ in Fig. 40.

f. Pull the corona wire in the direction of arrow in Fig. 40 so that the corona spring extends to 9,5 ±0.5mm. Then tighten screw ③ firmly to fix the corona wire.

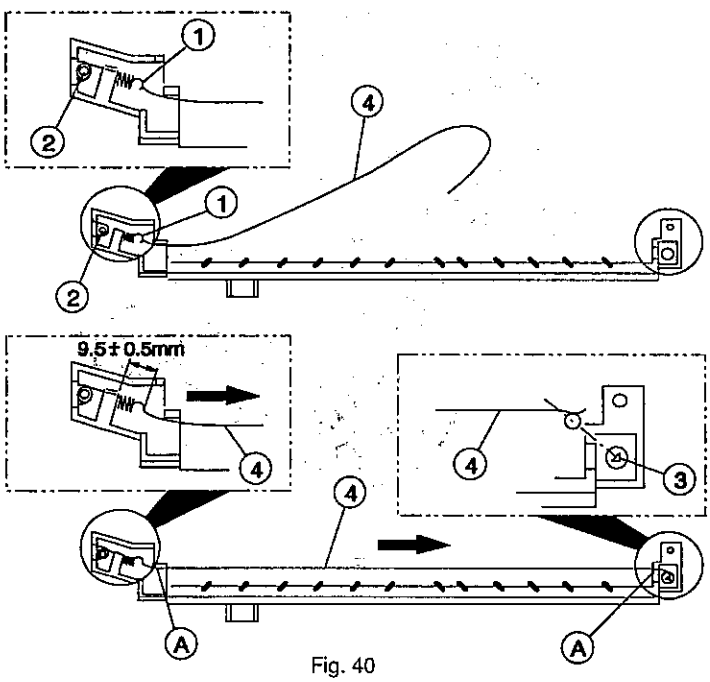


Fig. 40

<Note 1> The corona wire must be placed in the two grooves Ⓐ in Fig. 40.

<Note 2> After installation, check that the corona spring extends to 9.5 ±0.5mm. (Refer to the enlarged view of Fig. 40.)

g. Cut the reset of corona wire.

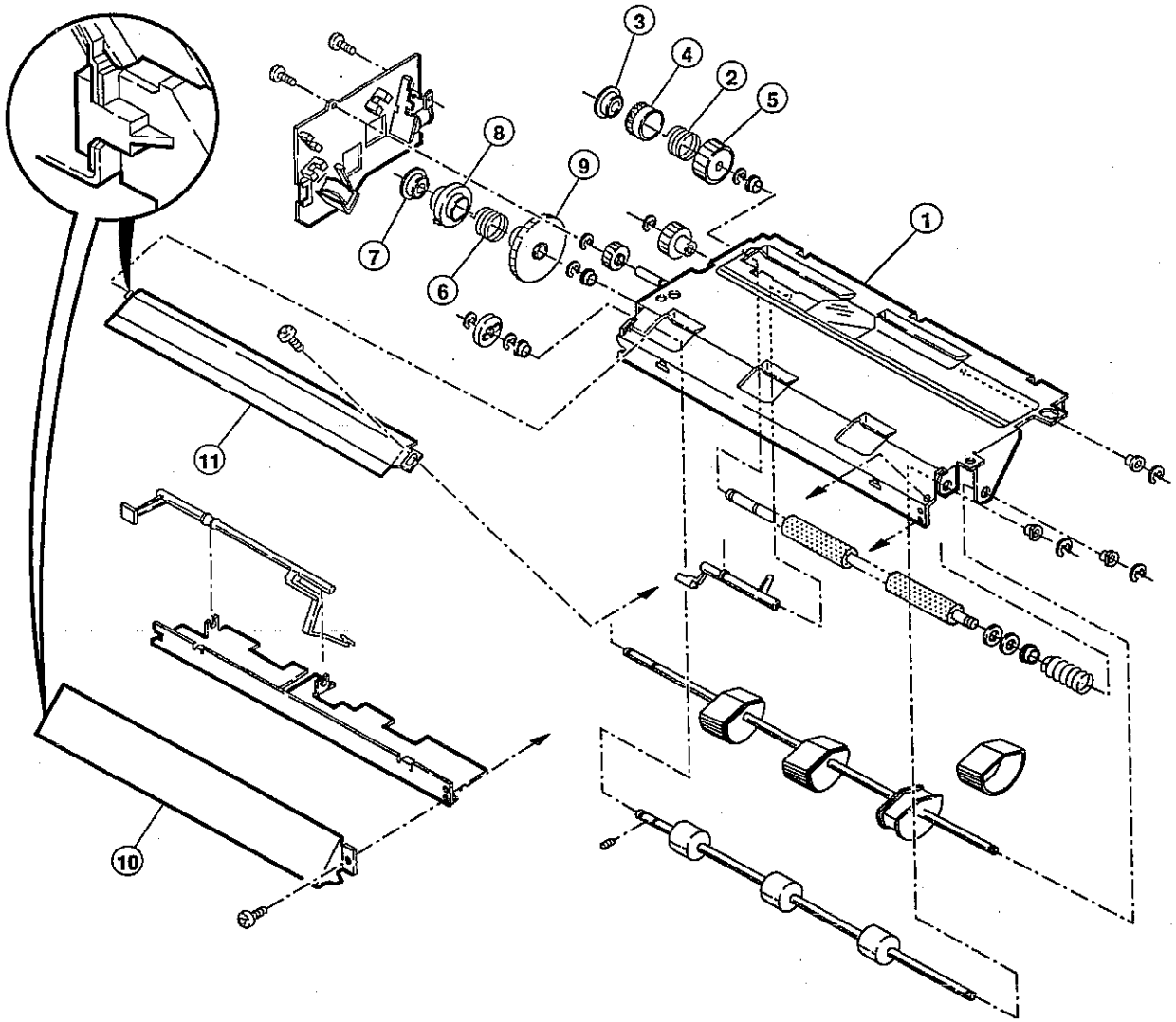


Fig. 41

14. Pickup roller, PF roller, FS roller

a. For disassembly of each parts, refer to Fig. 41.

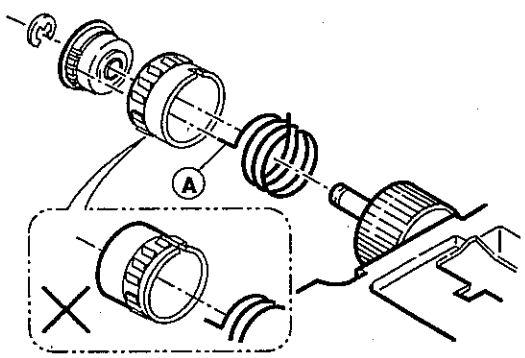


Fig. 42

[Note for reassembly]

- When installing each gear, bearing, and roller to paper guide ① in Fig. 41, refer to Fig. 41.
- When installing clutch spring ② in Fig. 41 to clutch boss ③, PS sleeve ④ and gear 30T ⑤, refer to Fig. 42.

  <Note 1> Be careful not to mistake the inserting direction of PS sleeve. (Refer to Fig. 42.)

  <Note 2> Section Ⓐ of the clutch spring in Fig. 42 may be inserted into any one of five holes of the clutch boss.
- When installing clutch spring ⑥ (for the pickup roller) in Fig. 41 to clutch boss ⑦, CL sleeve ⑧, and gear 54T ⑨, adjustments are required. Refer to Chapter 2, Section 1, "Pickup roller adjustment."
- After installing U-turn guide ⑩ and paper guide A2 ⑪ in Fig. 41 to paper guide ①, check that the left side is as shown in the enlarged view of Fig. 41.

15. High voltage PWB

a. Remove the TEL/LIU PWB from the PWB mounting plate according to procedures 1-b thru c.

b. Remove the PWB mounting plate form the lower frame according to procedure 10-b.

c. Remove the lock pawl holding plate ass'y from the lower frame according to procedure 10-c.

d. Remove the paper feed unit from the lower frame according to procedures 11-d and e.

e. Remove screw ① in Fig. 43.

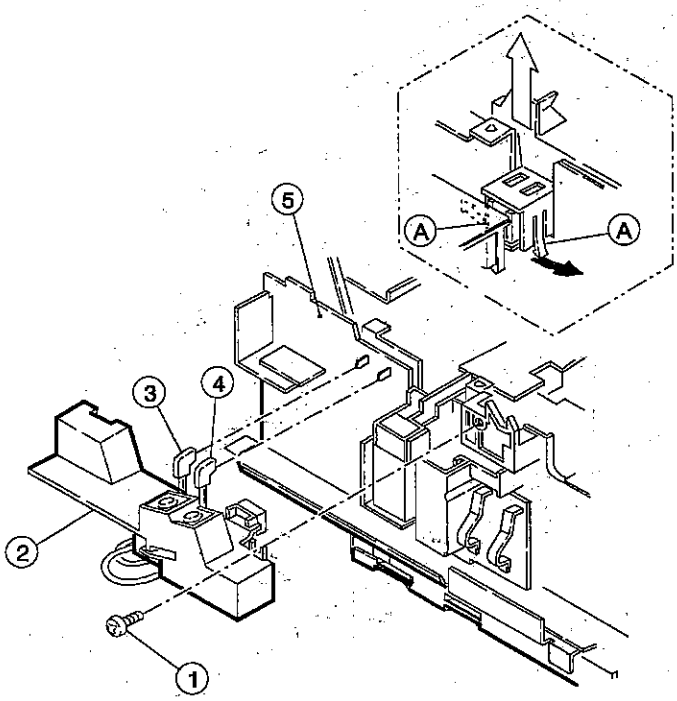


Fig. 43

f. Remove two pawls Ⓐ in Fig. 43 and remove high voltage cover ②.

g. Remove terminal (red) ③, terminal ④ (blue) in Fig. 43 from high voltage PWB ⑤.

h. Remove waste toner box ① in Fig. 44.

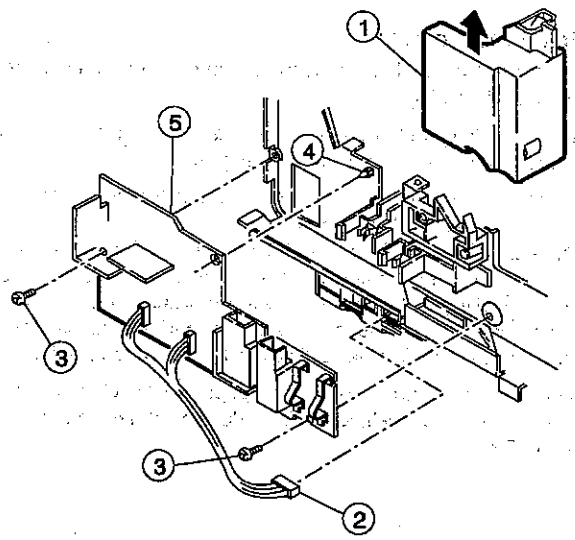


Fig. 44

i. Disconnect connector ② in Fig. 44.

j. Remove two screws ③ in Fig. 44, and remove high voltage PWB ⑤ from PWB holder ④.

k. Remove four screws ① in Fig. 45 and remove DR holder ②.

l. Remove high voltage holder ③ in Fig. 45.

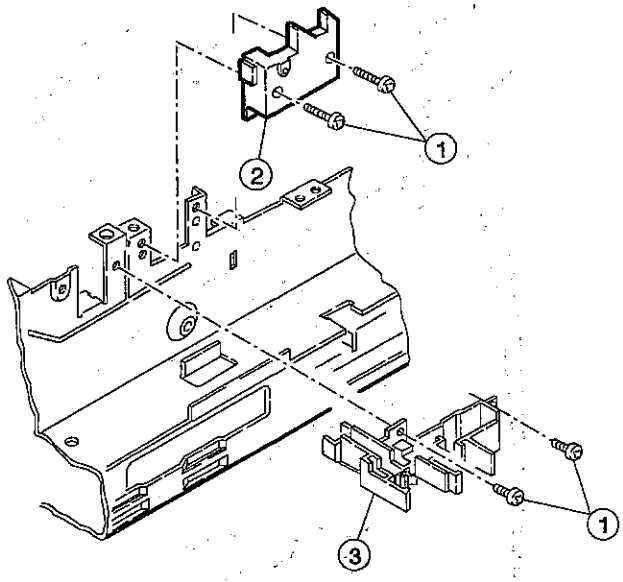


Fig. 45

[Note for reassembly]

- When installing high voltage PWB ⑤ in Fig. 44 to the lower frame, place the fuse terminal of the high voltage PWB as shown in Fig. 46.

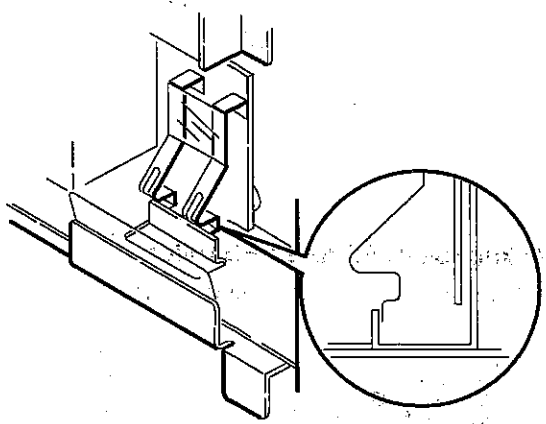


Fig. 46

- After installing high voltage holder onto the high voltage PWB, check that the high voltage holder terminals are as shown in Fig. 47.

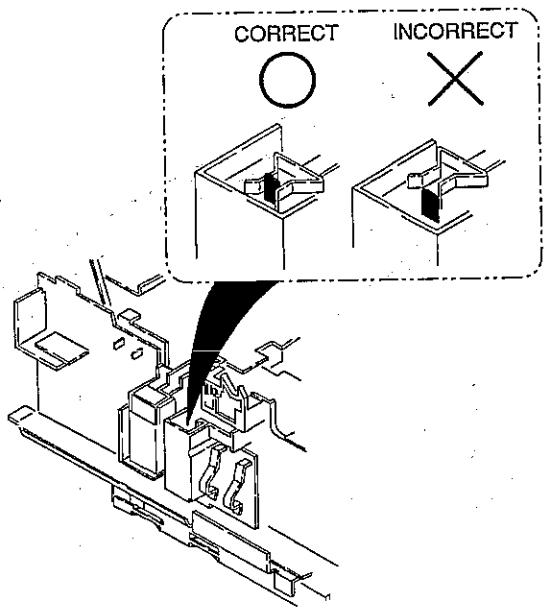


Fig. 47

- Be careful not to mistake terminal (red) ③ and terminal (blue) ④ when connecting them to high voltage PWB ⑤. Refer to Fig. 43.

16. Fuser unit

a. Remove the TEL/LIU PWB from the PWB mounting plate according to procedures 1-a thru c.

b. Remove the PWB mounting plate from the lower frame according to procedure 10-b.

c. Remove the AC power unit from the lower frame according to procedures 3-d and e.

d. Remove four screws ① in Fig. 48, and remove fuser unit ② from the lower frame.

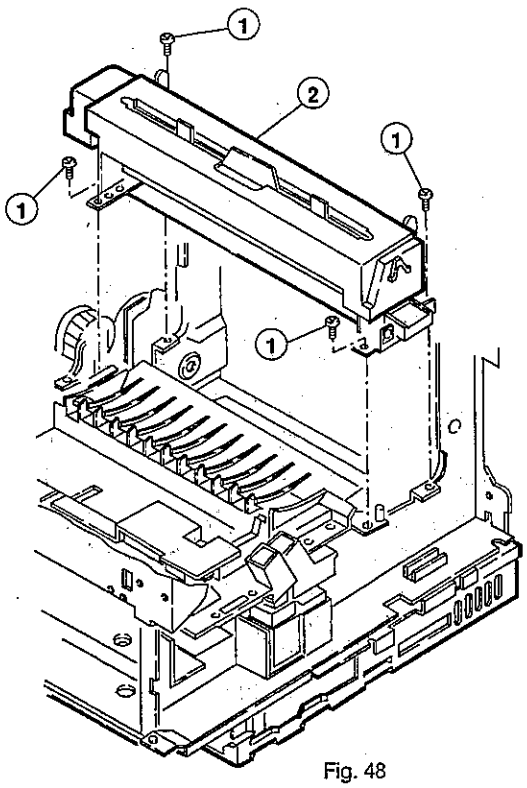


Fig. 48

e. Remove two screws ① in Fig. 49, and remove heater cover ②.

f. Remove heater lamp ③ in Fig. 49.

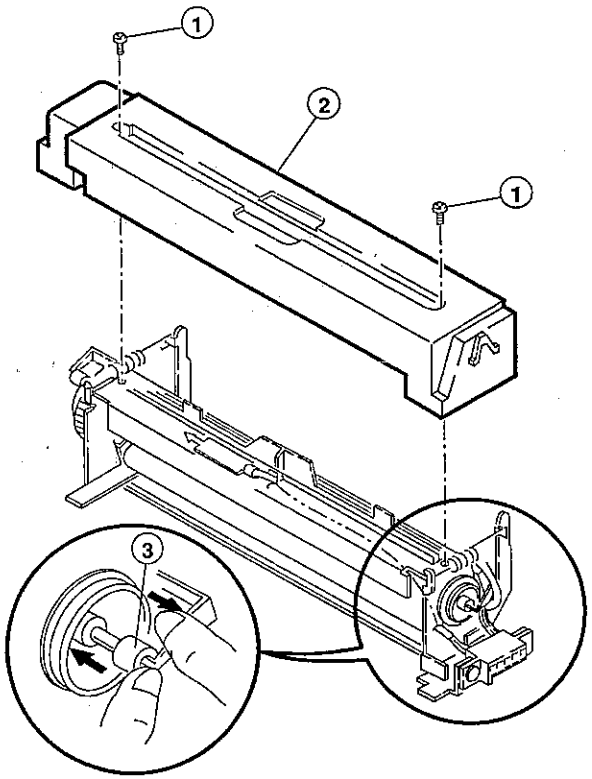


Fig. 49

<Note> When removing the heater lamp, be careful not to drop it.

g. For disassembly of each parts of the fuser unit, refer to Fig. 50.

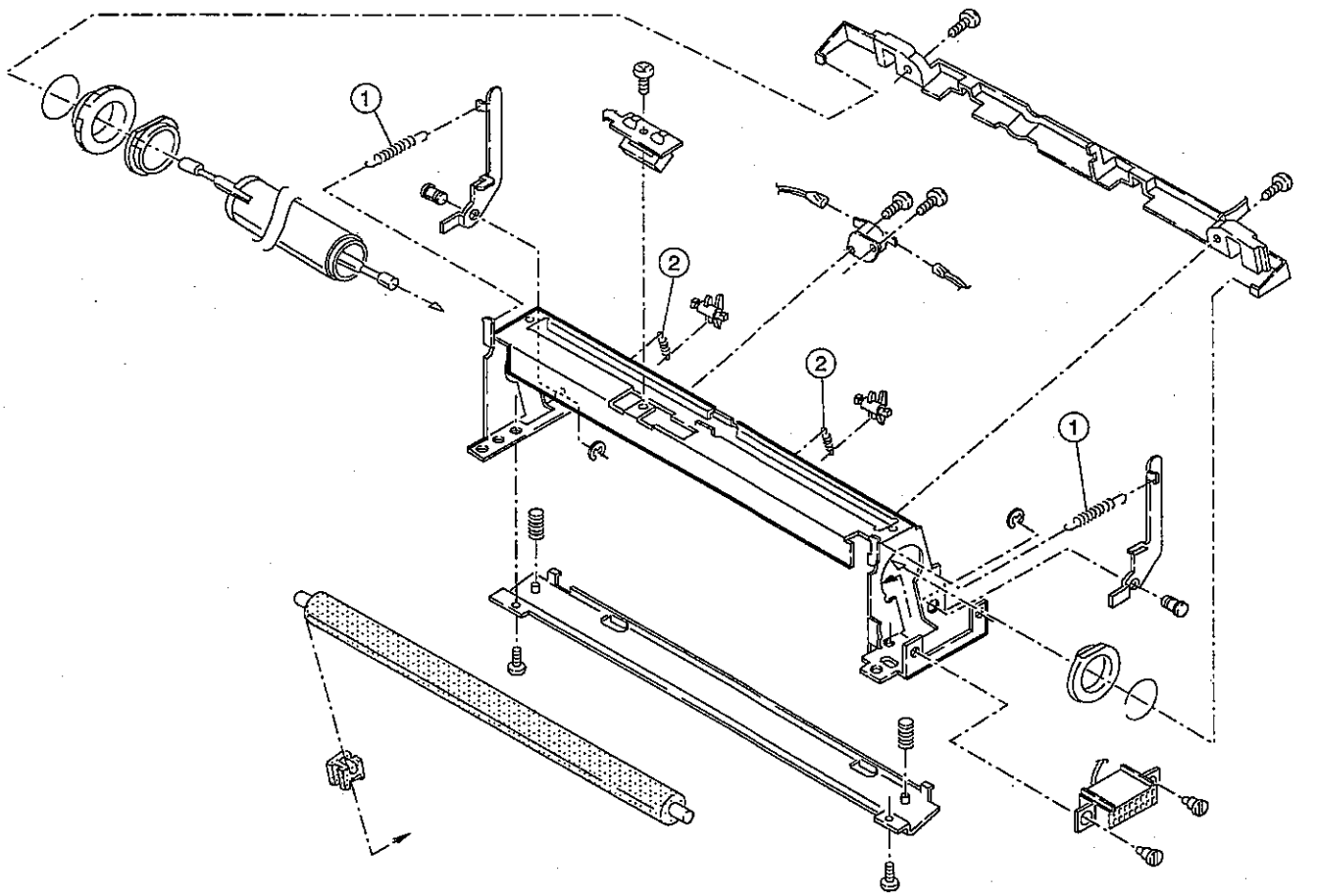


Fig. 50

[Note for reassembly]

- For wire treatment of the fuser unit, refer to Fig. 51.
- When installing release spring ① and separation pawl spring ② in Fig. 50, refer to the hook direction of the spring as shown in Fig. 52.

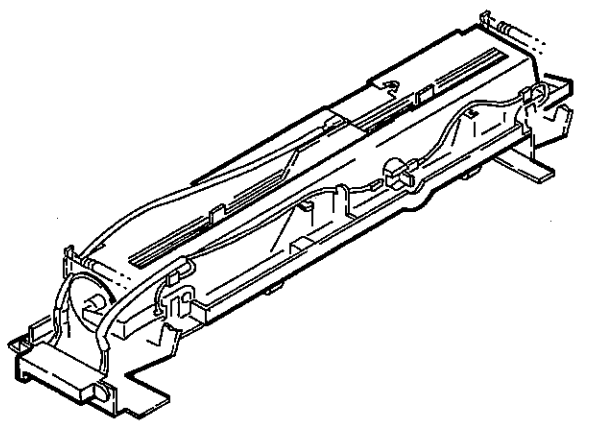


Fig. 51

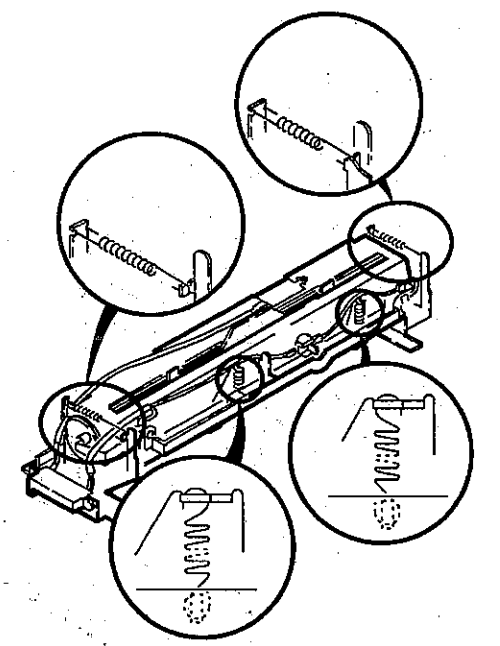


Fig. 52

For installing the heater lamp, follow the procedures below:

1. Refer to Fig. 53. Attach one end of the heater lamp to the terminal

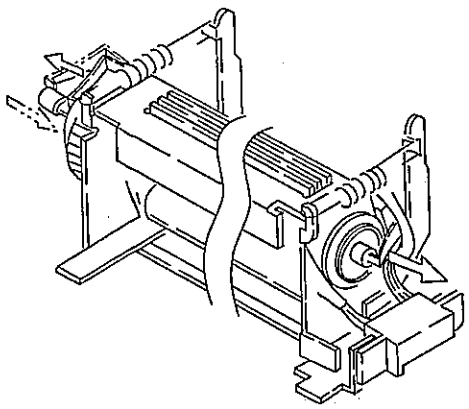


Fig. 53

2. While pushing the hearer lamp which is attached to the terminal in the direction of arrow as shown in Fig. 53, push the other terminal in the direction of arrow and attach the heater lamp.

17. Separation guide unit

a. Remove the TEL/LIU PWB from the PWB mounting plate according to procedures 1-a thru c.

b. Remove the PWB mounting plate from the lower frame according to procedure 10-b.

c. Remove the AC power unit from the lower frame according to procedures 3-d and e.

d. Remove the lock pawl holding plate ass'y from the lower frame according to procedure 10-c.

e. Remove the paper feed unit from the lower frame according to procedures 11-d and e.

f. Remove the fuser unit from the lower frame according to procedure 16-d.

g. Remove two screws ① in Fig. 54, and remove separation guide unit ② from the lower frame.

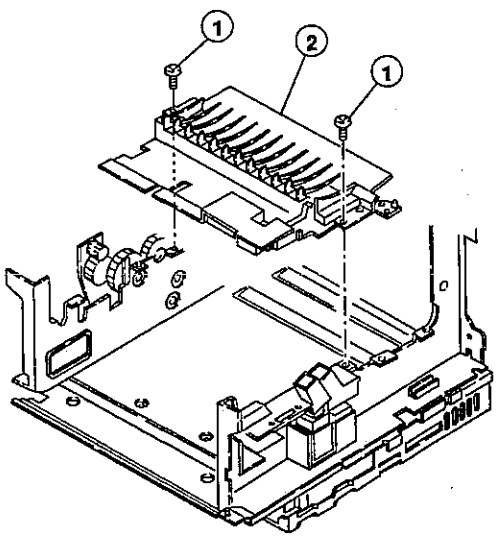


Fig. 54

<Note> Separation guide unit ② in Fig. 54 must be replaced in a whole unit. Since the sub-parts are not supplied, never disassemble the unit.

18. Sub-plate A ass'y, main motor and gears

a. Remove the fuser unit from the lower frame according to procedure 16-d.

b. Remove two screws ① in Fig. 55 and remove main motor cover ②.

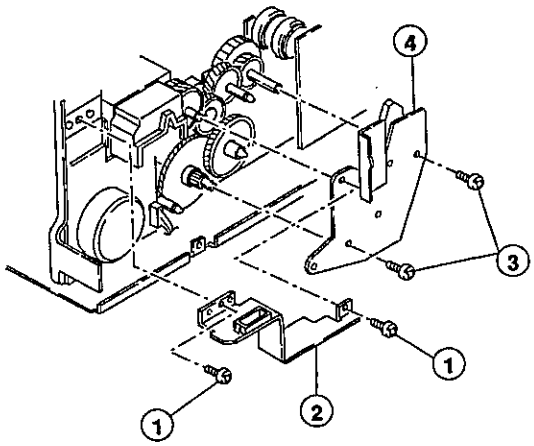


Fig. 55

c. Remove two screws ③ in Fig. 55 and remove sub-plate A ass'y ④.

d. For disassembly of sub-plate A ass'y ④ in Fig. 55, refer to Fig. 56.

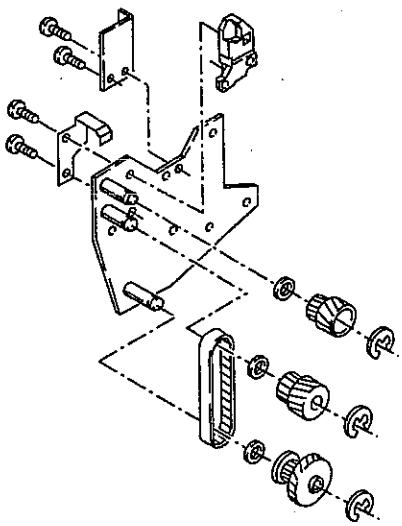


Fig. 56

e. For disassembly of gears connected with sub-plate A ass'y ④ in Fig. 55, refer to Fig. 57.

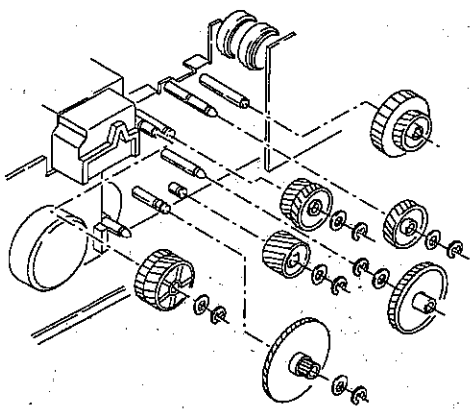


Fig. 57

f. Disconnect connector ① in Fig. 58.

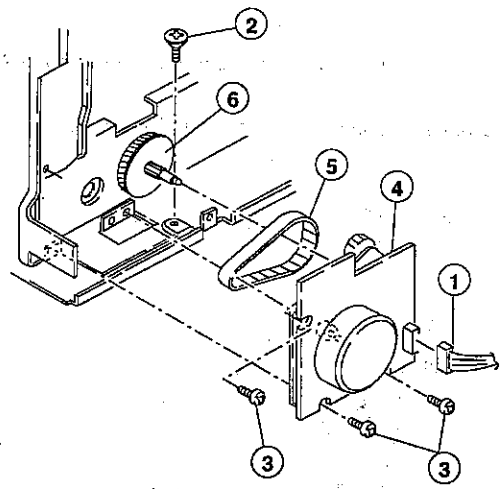


Fig. 58

g. Remove screw ② and three screws ③ in Fig. 58, and remove main motor ass'y ④ and timing belt ⑤.

[Note for reassembly]

- When installing timing belt ⑤ in Fig. 58 to main motor ass'y ④ and pulley gear ⑥, refer to Fig. 59. After installing, rotate the motor to check that pulley gear ⑥ rotates smoothly. Then secure with screws.

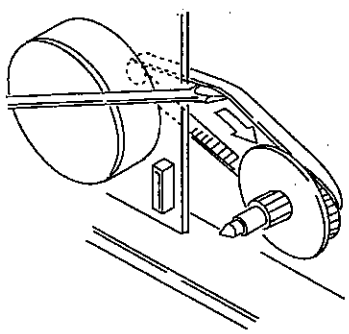


Fig. 59

- Lightly apply white grease to the gears, the shafts, and outer circumference of gear teeth.
- However, never apply white grease to the timing belt and the outer circumference of the pulley.
- When installing gears and belts to the sub-plate A, refer to Fig. 56.
- When installing gears, refer to the installing directions shown in Fig. 57.
- After installing gears, main motor ass'y, and sup-plate A ass'y rotate the main motor to check the following:
  1. All pulleys and gears rotate.
  2. No excessive force is applied to any pulley or gear.
  3. All pulleys and gears rotate smoothly.

[3] Memory upgrade installation

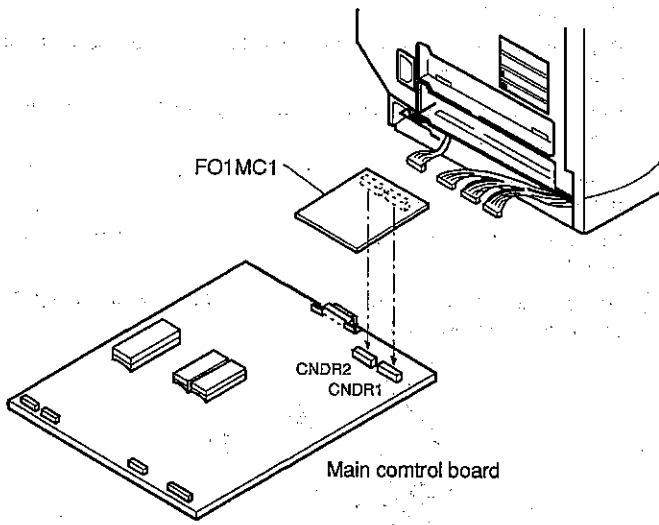
Connect the FO1MC1 to connectors CNDR1 and CNDR2 on the Main control unit.

Note: Print out the all of data which has been to store in the video memory.
Otherwise, memory data will be cleared when power switch has been "OFF".

(1) Remove the main control board. (See Chapter 3)

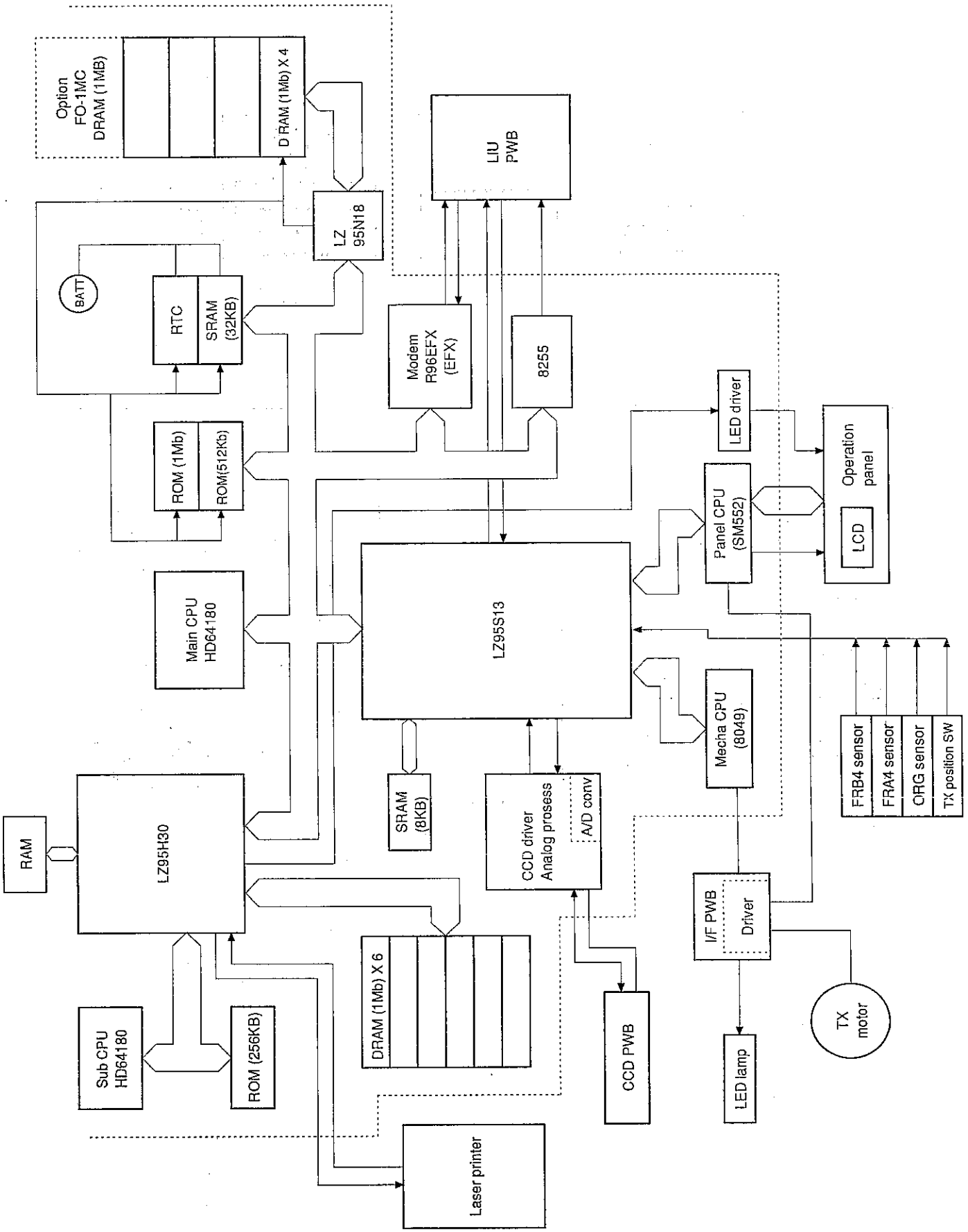
(2) Install the memory board (FO1MC1) to the connectors CNDR1 and CNDR2 on the Main control board.

(3) Reassemble the main control unit and perform diagnostic test to check for proper operation.

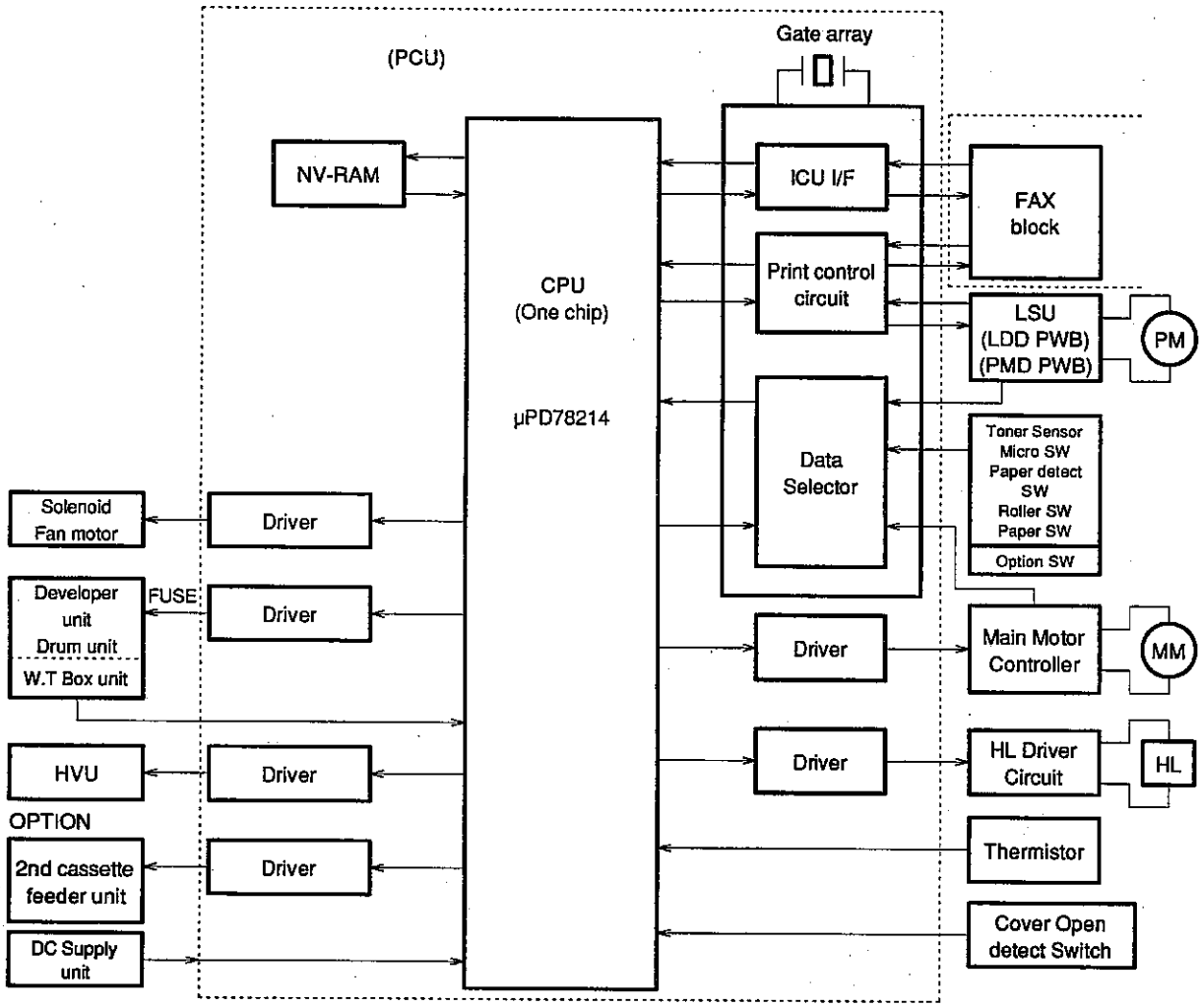


CHAPTER 4. DIAGRAMS

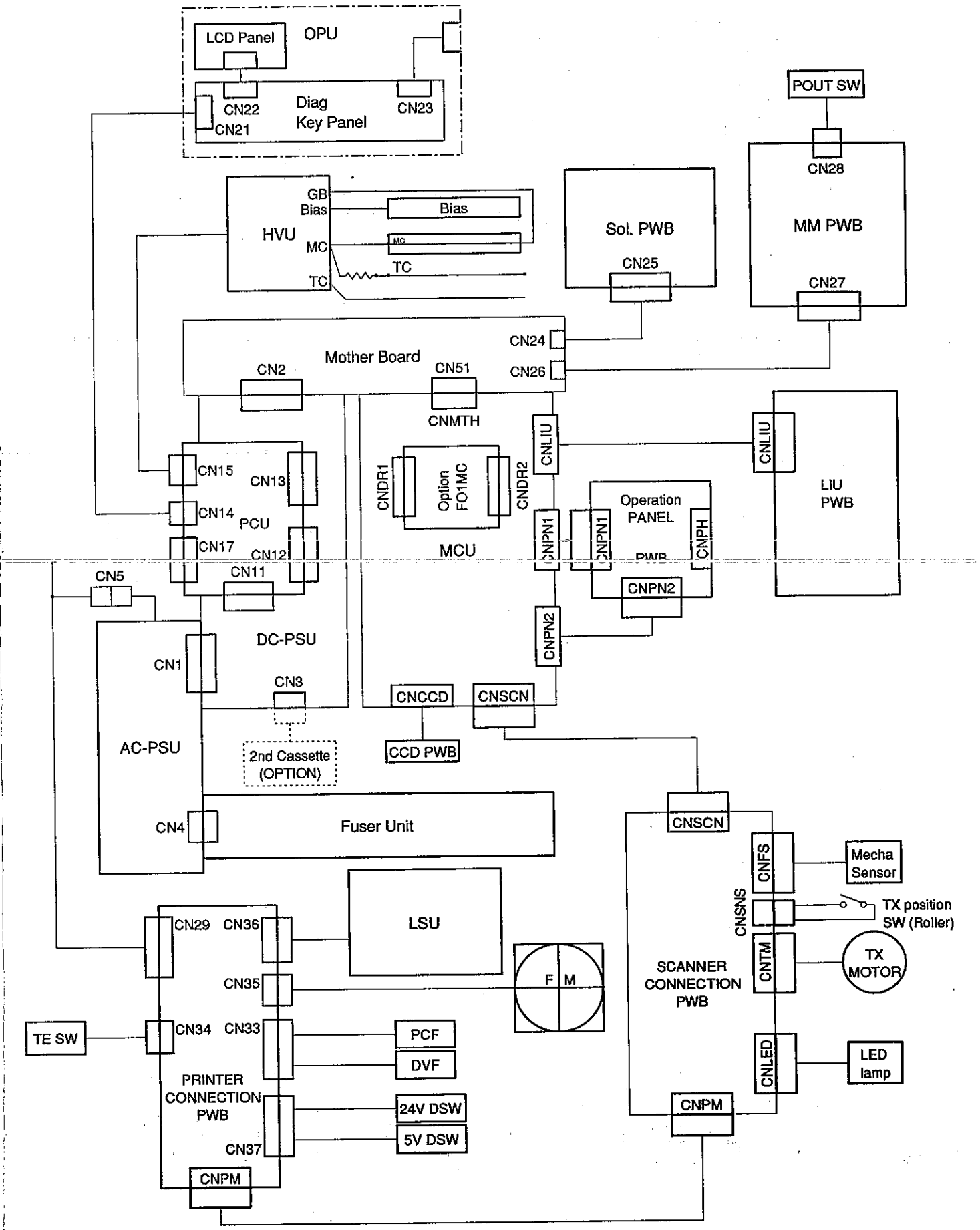
[1] BLOCK DIAGRAM 1



BLOCK DIAGRAM 2



[2] WIRING DIAGRAM



[3] CONNECTOR SIGNAL NAME 1

CN1	AC-PSU~ DC-PSU
1	VH1
2	GND24
3	RTH
4	5VR
5	+12V
6	GND
7	−12V
8	GND
9	+ 5 V
10	POUT
11	+24V
12	HLON

CN3	DC-PSU~ 2nd Cassette
1	+24V
2	PFMD
3	EXPE
4	EXPS2
5	EXCON
6	GND
7	EXPFS
8	EXPS1
9	EXPS3

CN11	DC-PSU~ PCU(1)
1	+5VR
2	RTH
3	VH1
4	VH1
5	+24V
6	+24V
7	GND24
8	GND24
9	+ 5 V
10	+ 5 V
11	+12V
12	−12V

CN14 CN21	PCU~ OPU
1	SDATA
2	SCKOP
3	GND
4	GND24
5	+24V
6	+ 5 V

CN22	OPU (KEY Panel~LCD Panel)
1	DB7
2	DB6
3	DB5
4	DB4
5	DB3
6	DB2
7	DB1
8	DB0
9	E
10	R/W
11	RS
12	VO
13	+ 5 V
14	GND

CN28	MM PWB~ POUT SW
1	POUT
2	PO5V
3	GND

CN36	LSU
1	+24V
2	LD5V(+5V)
3	PMTLK
4	PMD
5	SYNC
6	−12V
7	+12V
8	GND(VR)
9	VIDEO
10	LDON
11	GND
12	GND24

CN2	DC-PSU~Mother Board		
1 A	GND	1 B	+ 5 V
2 A	GND	2 B	+ 5 V
3 A	GND	3 B	+ 5 V
4 A	−12V	4 B	+12V
5 A	RES	5 B	POUT
6 A	READY	6 B	MMTLK
7 A	SRDY	7 B	MMD
8 A	HSYNC	8 B	GND24
9 A	GND	9 B	+24V
10A	DATA	10B	NC
11A	CLK	11B	HFIN
12A	PE	12B	PFS
13A	PSS	13B	PIN
14A	POFF	14B	PRIM
15A	CRDY	15B	PAGE
16A	STS	16B	CMD

CN12	DC-PSU~ PCU(2)
1	CLK
2	HFIN
3	MMD
4	MMTLK
5	POUT
6	EXPFS
7	EXPS1
8	EXPS3
9	EXCON
10	PFMD
11	EXPE
12	EXPS2
13	GND
14	GND
15	HLON

CN15	PCU~HVU
1	MCON
2	WTB
3	TCON
4	+24VR
5	BiasON
6	PS1
7	GRLON
8	PS2
9	+24V
10	PS3
11	GND24
12	GND
13	WTBF
14	NC

CN33	PC FUSE DV FUSE
1	PCF
2	24VR
3	DVF
4	24VR

CN34	TS SW
1	TE5V
2	TE
3	GND

CN37	Door SW
1	+ 5 V
2	LD5V(+5V)
3	+24V
4	VH1

CN4	AC-PSU~ Fuser Unit
1	RTH
2	+5VR
3	NC
4	NC
5	NC
6	HLN
7	HLL

CN5	AC-PSU~PCU, CONNECTION PWB
1	+24V
2	+24V

CN13	DC-PSU~ PCU(3)
1	DATA
2	HSYNC
3	SRDY
4	READY
5	RES
6	STS
7	CMD
8	CRDY
9	PAGE
10	POFF
11	PRIM
12	PSS
13	PIN
14	PE
15	PFS

CN17 CN29	PCU~ CONNECTION PWB
1	PMD
2	PMTLK
3	−12V
4	SYNC
5	+12V
6	+ 5 V
7	LDON
8	VIDEO
9	GND24
10	GND(VR)
11	TE
12	GND
13	FMD
14	NC
15	TE5V
16	DVF
17	+24VR
18	PCF
19	+24V
20	+24V

CN24 CN25	Mother Board~ Sol. PWB
1	GND24
2	+24V
3	PIN
4	PSS
5	PFS
6	PE
7	HFIN
8	NC(CN24)

CN35	Fan Motor
1	+24V
2	FMD

CNPM	Pulse motor
1	+24V
2	+24V
3	+ 5 V
4	GND
5	GND

CN26 CN27	Mother Board~ MM PWB
1	+24V
2	GND24
3	+ 5 V
4	GND
5	MMD
6	MMTLK
7	POUT

CONNECTOR SIGNAL NAME 2

CNMTH	Mother-MCU		
GND (DG)	1A	1B	+5V
GND (AG)	2A	2B	+5V
−12V	3A	3B	+12V
$\overline{RES}$	4A	4B	$\overline{POFF}$
$\overline{READY}$	5A	5B	$\overline{PRIM}$
$\overline{SRDY}$	6A	6B	$\overline{CRDY}$
$\overline{HSYNC}$	7A	7B	$\overline{PAGE}$
STS	8A	8B	CMD
$\overline{CLK}$	9A	9B	$\overline{DATA}$
GND (DG)	10A	10B	GND (DG)

CNLIU	LIU PWB-MCU		
TXOUT	1	2	RXIN
$\overline{RS1}$	3	4	$\overline{RS2}$
CML	5	6	PISGT
$\overline{AMPE}$	7	8	RINGER
MONITOR	9	10	OHRL
$\overline{RHS}$	11	12	MTOUT
CI	13	14	DT1
DT2	15	16	DT3
DT4	17	18	+12V
+5V	19	20	−12V
AG	21	22	AG
P	23	24	Q
E	25	26	C/TONE
DTMFC	27	28	TRS
SDT	29	30	NC

CNSCN	Scaner-Connection PWB-MCU
1	GND (DC)
2	SORG
3	SFRA5
4	SFRB4
5	LEDON
6	N.U.
7	TPA
8	TPB
9	$\overline{TPA}$
10	$\overline{TPB}$

CNCCD	CCD-MCU
1	ϕ1
2	ϕT
3	−12V
4	Vo
5	+12V
6	AG
7	ϕR
8	ϕ2

CNPN1	
1	SEN1
2	2
3	3
4	4
5	KN10
6	11
7	LED1
8	2
9	3
10	4
11	5
12	6
13	+5V
14	GND

CNPN2	
1	RS
2	R/W
3	E
4	L
5	KN10
6	11
7	LED1
8	2
9	3
10	4
11	5
12	6

CNLIU			
TXOUT	1	2	RXIN
$\overline{HS1}$	3	4	$\overline{HS2}$
CML	5	6	PISGT
N.U.	7	8	N.U.
N.U.	9	10	N.U.
N.U.	11	12	N.U.
$\overline{CI}$	13	14	N.U.
N.U.	15	16	N.U.
N.U.	17	18	+12V
+5V	19	20	−12V
AG	21	22	AG
P RLY	23	24	Q RLY
E RLY	25	26	C/TONE
DTMFC	27	28	TRS
SDT	29	30	N.U.

LNJ	
1	N.U.
2	TEL1
3	LINE1
4	LINE2
5	TEL2
6	GD

CNHTH			
DG	1A	1B	+5V
AG	2A	2B	+5V
-12V	3A	3B	+12V
$\overline{RES}$	4A	4B	$\overline{POFF}$
$\overline{READY}$	5A	5B	$\overline{PRTH}$
$\overline{SRDY}$	6A	6B	$\overline{CRDY}$
$\overline{HSYNC}$	7A	7B	$\overline{PAGE}$
STS	8A	8B	CMD
$\overline{CLK}$	9A	9B	$\overline{DATA}$
DG	10A	10B	DG

CNPN1	IL-S-14P
1	$\overline{SEN1}$
2	$\overline{SEN2}$
3	$\overline{SEN3}$
4	$\overline{SEN4}$
5	$\overline{KNI0}$
6	$\overline{KNI1}$
7	$\overline{LED1}$
8	$\overline{LED2}$
9	$\overline{LED3}$
10	$\overline{LED4}$
11	$\overline{LED5}$
12	$\overline{LED6}$
13	+5V
14	GND

CNLIU			
TXOUT	1	2	RXIN
$\overline{HS1}$	3	4	$\overline{HS2}$
CML	5	6	PISGT
$\overline{AHPE}$	7	8	RINGER
MONITOR	9	10	OHRL
RH5	11	12	HTOUT
DI1	13	14	DT1
DI2	15	16	DT3
DI4	17	18	+12V
+5V	19	20	-12V
AG	21	22	AG
PRLY	23	24	ORLY
ERLY	25	26	C/TONE
DTMFC	27	28	TRS
SDT	29	30	RECOUT

CNLIU			
TXOUT	1	2	RXIN
$\overline{HS1}$	3	4	$\overline{HS2}$
CML	5	6	PISGT
N.U.	7	8	N.U.
N.U.	9	10	N.U.
N.U.	11	12	N.U.
$\overline{CI}$	13	14	N.U.
N.U.	15	16	N.U.
N.U.	17	18	+12V
+5V	19	20	-12V
AG	21	22	AG
P RLY	23	24	Q RLY
E RLY	25	26	C/TONE
DTMFC	27	28	TRS
SDT	29	30	N.U.

CNCCO	IL-S-8P
1	+1
2	+T
3	-12V
4	VD
5	+12V
6	AG
7	+R
8	+2

CNPN2	IL-S-12P
1	RS
2	R/W
3	E
4	LD0
5	LD1
6	LD2
7	LD3
8	LD4
9	LD5
10	LD6
11	LD7
12	GND

CNSCN	IL-S-10P
1	DG
2	SGRG
3	SFRAS
4	SFRB4
5	LEDON
6	NU
7	TPA
8	TPB
9	$\overline{TPA}$
10	$\overline{TPB}$

LNJ	
1	N.U.
2	TEL1
3	LINE1
4	LINE2
5	TEL2
6	GD

RC-1N056A

Chapter 5. CIRCUIT DESCRIPTION

[1] Unit (board) configuration

1. General description

This machine is mainly composed of the following units (boards)

(1) Control board

Almost all the controls are performed by this control board. The mechanical controls are performed by the mechanical-CPU (8049, 8 bit), the facsimile block controlled by the main CPU (HD64180, 8 bit, compatible with the Z80). The LBP (Laser Beam Printer) block controlled by the sub-CPU (HD64180, 8 bit).

(2) TEL/LIU board

The TEL/LIU (Line Interface Unit) board performs interface with the communication lines, selection of facsimile and telephone, and reception and detection of Auto-Receive and also performs telephone functions and detection of the hook swich.

(3) CCD board

The CCD board is composed of the CCD (Charge Coupled Device) and its peripheral devices, and converts graphic information (optical signals) into electrical signals.

(4) Operation panel unit

The operation panel unit is composed of switches, LCD, LED, etc., and transmits the signals of a pressed switch to the control board.

(5) Scanner connection board

The scanner connection board facilitates connections between boards for the convenience of wiring and servicing.

(6) Mother board

The mother board facilitates connections between boards for the convenience of wiring and servicing.

(7) PCU board

The PCU (printer process control) board performs total control of the printer unit.

(8) AC power supply unit

The AC power supply unit is in the power filter unit and triac control unit (heater control).

(9) DC power supply unit

The DC power supply unit generates DC voltages of +5, +5S, +12, −12, and +24V, which are provided to other units.

2. Operational description

Fig. 2 shows flow of signals for transmission, reception, and copying. Operational descriptions are given below:

1) Transmission

① Transmission is started by turning on the CML relay according to data from the panel CPU, sensor signals, and the state of the TEL/LIU PWB.

② Transmission state is obtained by the commands to the panel CPU and the mechanism CPU and I/O port control.

③ Control mechanism CPU commands and the read system gate array, performs binary coding of read signal from the optical system, and transmits data to the line memory (DMA transmission).

④ Reads raw data from the line memory performs MH coding, and writes in the transmission buffer in parallel with procedure ③.

⑤ Transmits data from the transmission buffer to the modem according to data transmit request signal from the modem or the CSIO included in HD64180. (Data is transmitted to the modem through the system data bus in the case of G3 mode, and through the CSIO included in HD64180 in the case of G2 mode.)

⑥ Coded data is modulated in the modem and signals are delivered to the line.

⑦ According to sensor and key input state and procedure, transmission is continued or terminated.

2) Reception

① CML relay is turned on to start reception according to data from panel CPU by key scanning, sensor signal, and TEL/LIU PWB state.

② The mechanism is brought into reception mode by commands to the panel CPU and mechanism CPU, and I/O port control.

③ Signals from the line are demodulated in the modem.

④ Data from the modem is written in the transmission buffer according to the interruption by the data transmission request signal from the modem or CSIO in HD64180.

⑤ Data is read from the transmission buffer.

⑥ In parallel with procedure ⑤, data on the line memory is DMA-transmitted to the sub-CPU. The sub-CPU writes data to the page memory, and sends to LBP through gate array.

⑦ According to the sensor and key input state and procedure, reception is continued or terminated.

3) Copy procedure

① Copy operation is started according to data from the panel CPU by scanning, sensor signal, and TEL/hook Switch PWB state.

② The mechanism, etc. are brought into copy state by commands to the panel CPU and mechanism CPU and I/O port control.

③ Commands to the mechanism CPU and the reading system gate array are controlled, the read signals from the optical system are binary coded, and the data is DMA-transmitted to the line memory.

④ In parallel with procedure ③, data in the line memory is DMA-transmitted to the sub-CPU. The sub-CPU writes data to the page memory, and sends to LBP through gate array.

⑤ Copy operation is continued or terminated according to the sensor and key input state.

[2] Main control unit description

1. General description

Fig.2 shows the functional blocks of the control PWB, which is composed of 7 blocks.

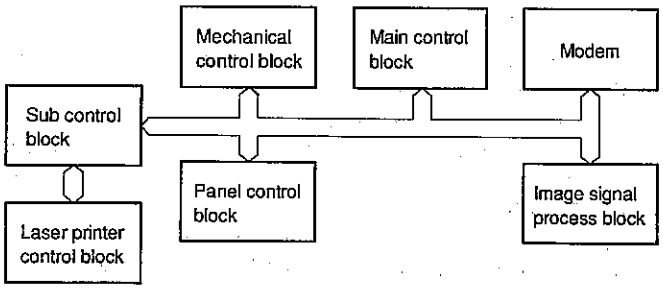


Fig.2 Control PWB functional block diagram

2. Description of each block

(1) Main control block

The main control block is composed of 8-bit microprocessor HD64180, ROM (192KByte), and RAM (544KByte). Devices are connected to the bus to control the whole unit.
Descriptions on each part composing the main control block are given below:

1) HD64180 (IC25, main CPU) ... pin-80 QFP

This is a CMOS 8-bit microprocessor. A high-speed CPU (compatible with Z80 upper class models) and peripheral functions are incorporated in one chip.

This system allows the following functions.

- Memory management utility (MMU)
- DMA controller (2 channel); channel 0: For read, channel 1: For write.
- Clock synchronizing serial I/O port (CS I/O); For G2 mode data transmission
- Timer
- Interruption; As external interruption, it is used only for modem interruption (IRQ).

Operating speed is 5MHz with 10MHz oscillator connected.

In addition, 5MHz clock is supplied from 0 terminal (pin 71) as the basic clock of the gate array (LZ95S13).

For reset when power is turned on, LOW signal is supplied to $\overline{\text{RESET}}$ terminal from reset signal ($\overline{\text{RES}}$) of PCU PWB.

2) 27C010 (IC14): pin 32, DIP

1Mbit EPROM
Stores the main CPU software.

3) 27C512 (IC11): pin 28, DIP

512Kbit EPROM
Stores the main CPU software.

4) μPD43257A (IC24): pin 28: SOP

256Kbit SRAM
Used as the main CPU system RAM, the transmission buffer, and memory to store monthly report and telephone number data. When the AC power is turned off, the memory is backed up by the lithium batter.

5) MSM62 x 42 (IC31): pin-18, DIP

Clock IC with quarts incorporated.

It is battery-backed up when power is turned off, as well as RAM.

For reading time registration and data, it is directly connected to the system bus of the main CPU, and is controlled as an I/O port.

6) LZ95S13 (IC16): pin-160, QFP

The following functions are incorporated to support the main CPU.

- Main CPU I/F and register
- Panel CPU I/F
- Mechanism CPU I/F and mechanical control block
- Modem I/F
- I/O port
- Main CPU timer
- Read system control

7) LZ95N18 (IC21) pin 100 QFP

The following functions are incorporated to support the main CPU.

- Main CPU I/F and register
- Memory mapping
- DRAM controllor.

8) TMS44C256 (IC27, 28, 29, 30)

1Mbit DRAM
Used as ECM memory and image memory.

9) LZ95H30 (IC13) pin 128, QFP

This gate array is connected both to the main CPU and to the sub CPU. For the operation of the sub CPU, refer to the section of the sub CPU.

LZ95S13 (IC16)

Pin No.	Signal name	I/O	Description
1	$\overline{\text{FRSNS}}$	I	Front sensor input signal (P217)
2	$\overline{\text{ORGSNS}}$	I	Original sensor input signal (P216)
3	$\overline{\text{PAPSNS}}$	I	B4 front sensor input signal (P215)
4	$\overline{\text{DORSW}}$	I	N.U
5	TMRCK	O	Sub CPU timer clock
6	PNLCK	O	Panel CPU clock
7	RSL	I	Panel CPU register read signal
8	$\overline{\text{ACKP}}$	I	Panel CPU register write signal
9	$\overline{\text{STBP}}$	I	Panel CPU register write signal
10	IBF	O	Panel CPU command input buffer full signal
11	$\overline{\text{OBF}}$	O	Panel CPU command output buffer full signal
12	MD7	I/O	(MSB) Panel CPU data I/F signal
13	MD6		
14	MD5		
15	MD4		
16	MD3		
17	MD2		
18	MD1		
19	MD0		(LSB)
20	Vcc	—	
21	GNDWR	—	
22	THMO	I/O	N.U
23	THMI	I	N.U
24	PCLK	O	N.U
25	DATA	O	N.U
26	$\overline{\text{LATCH}}$	O	N.U
27	STB1	O	N.U
28	STB2		
29	STB3		
30	STB4		
31	STB5		
32	STB6		
33	STB7		
34	STB8		
35	$\overline{\text{RPB}}$	O	N.U
36	$\overline{\text{PRA}}$		
37	RPB		
38	RPA		
39	$\overline{\text{TPB}}$	O	Transmission motor excitation phase data signal
40	$\overline{\text{TPA}}$		
41	TPB		
42	TPA		
43	ALE	I	Mechanical CPU ALE clock output
44	TO	I	Mechanical CPU TO clock output
45	$\overline{\text{MKWR}}$	I	Mechanical CPU register write signal
46	$\overline{\text{MKRD}}$	I	Mechanical CPU register read signal
47	$\overline{\text{MINT}}$	O	Mechanical CPU command interrupt signal
48	MKD7	I/O	(MSB) Mechanical CPU data I/F signal
49	MKD6		
50	MKD5		
51	MKD4	I/O	Mechanical CPU data I/F signal
52	MKD3		
53	MKD2		
54	MKD1		
55	MKD0		(LSB)
56	CUTSNS	I	N.U (P213)
57	CML	O	CML relay control signal (P107)
58	CI	I	CI detect signal (P207)
59	TEST	I	Test terminal
60	GND	—	
61	Vcc	—	
62	(ERLY)	O	(P117)
63	(QRLY)	O	(P116)
64	(PRLY)	O	(P115)
65	(C-TONE)	O	(P114)
66	DT4	O	Dial signal (P113)
67	DT3	O	Dial signal (P112)
68	DT2	O	Dial signal (P111)
69	DT1	O	Dial signal (P110)
70	GND	—	
71	PISGT	I	PIS detect signal (P206)
72	HS2	I	Hook SW detect signal (P205)
73	HS1	I	Hook SW detect signal (P204)
74	RHS	I	Hook SW signal (P203)
75	MTOUT	I	Mute out signal (P202)
76	DTMFRT	I	DTMF IC output signal (P201)
77	DTMFEST	I	DTMF IC output signal (P200)
78	(SDT)	I	(P212)
79	$\overline{\text{OE}}$	O	Image process RAM $\overline{\text{OE}}$ signal
80	$\overline{\text{WE}}$	O	Image process RAM $\overline{\text{WE}}$ signal
81	RD7	I/O	Image process RAM data signal
82	RD6		
83	RD5		
84	RD4		
85	RD3		
86	RD2		
87	RD1		
88	RD0		
89	BNKS2	O	Image process RAM bank select signal
90	BNKS1		
91	GND	—	
92	SW2	I	
93	(DTMFC)	O	Image process RAM address signal
94	RA9		
95	RA8		
96	RA7		
97	RA6		
98	RA5		
99	RA4		
100	Vcc	—	
101	GND	—	
102	RA3	O	Image process RAM address signal
103	RA2Y		
104	RA1		
105	RA0		

Pin No.	Signal name	I/O	Description
106	DCLK	I	Modem sampling clock signal
107	TXD	O	Modem transmission data signal
108	RXD	I	Modem reception data signal
109	$\overline{DCD}$	O	Modem carrier detection signal
110	$\overline{RTS}$	O	Modem transmission request signal
111	TXDIN	I	G2 transmission signal
112	$\overline{IOSA0}$	O	I/O select signal
113	(FO8A4)	O	(P104)
114	$\overline{IOSD0}$	O	I/O select signal
115	$\overline{IOSE0}$	O	I/O select signal
116	$\overline{IOSF0}$	O	I/O select signal
117	$\overline{RESET}$	I	Reset signal
118	$\overline{DREQ1}$	O	DMA1 request signal
119	$\overline{DREQ0}$	O	DMA0 request signal (Not Used)
120	DTMFPD	O	DTMF IC control signal (P105)
121	XTAL	I	Basic clock input
122	$\overline{WR}$	I	I/O write signal
123	$\overline{RD}$	I	I/O read signal
124	A7	I	Main CPU address bus
125	A6		
126	A5		
127	A4		
128	A3		
129	A2		
130	A1		
131	A0		
132	D7	I/O	Main CPU data bus
133	D6		
134	D5		
135	D4		
136	D3		
137	D2		
138	D1		
139	D0		
140	Vcc	—	
141	GND	—	
142	DVID7	I	Digital video signal
143	DVID6		
144	DVID5		
145	DVID4		
146	DVID3		
147	DVID2		
148	DVID1		
149	DVID0		
150	ADCK	O	A/D conversion clock
151	HFTN	O	Binary/intermediate tone select signal
152	$\overline{GTW}$	O	Peak detection period signal
153	$\overline{PHIBL}$	O	Clamp period signal
154	$\overline{PHISH}$	O	Sample hold signal
155	$\overline{PHI1}$	O	CCD transfer clock (1 phase)
156	$\overline{PHI2}$	O	CCD transfer clock (2 phase)
157	$\overline{PHIR}$	O	CCD reset pulse
158	$\overline{RPHIT}$	O	CCD shift pulse
159	$\overline{S2A}$	I	S2A mode signal
160	BZ	O	Alarm buzzer signal

(2) Panel control block

The panel CPU, a 4-bit, 1-chip microprocessor LU552B4 (IC26) is used. The following controls are performed through LZ95S13 according to commands from the main CPU.

- Operation panel key scanning
- Operation panel LCD display
- LED lamp lighting control (pin 23, output)
- G2 mode PIS detection (pin 28, input)

* I/F with the main CPU (pins 10 ~ 20 pins 6, 26, 27) (i/o, i, o)

For the basic clock, 2.5 MHz clock is supplied from LZ95S13 CP2P5M terminal (pin 6). For the reset signal, the same signal as the main CPU signal is inputted.

In addition, 2KHz clock is supplied from LZ95S13 TIMER terminal (pin 5) as the panel CPU's timer clock.

(3) Mechanical control block

The mechanical control block is composed of the mechanical CPU (8 bit, 1 chip microprocessor 8049), part of LZ95S13, and the motor drive circuit. It controls the TX motor.

The mechanical CPU is connected with a 10MHz oscillator.

1) TX motor control

According to effective read synchronization signal (SRRDY) supplied from the reading system gate array when transmitting, and according to the command signals (PRDY (LZ95S13 internal)) from the main CPU when copy mode, the motor phase data is sent to the internal register of LZ95S13.

In LZ95S13, TX data is supplied to the motor driver (TD62064 (on the scanner connect PWB)) through pins 39 ~ 42, via the protect circuit which is in the state other than the state where one phase or neighboring two phases are on.

(4) Image signal processing block

The image signal processing block is composed of the following:

① CCD drive block (LZ95S13 (IC16)), HC04 (IC35), etc.)

② Analog processing block

- OP amp. (IC42:MC34004),
- Analog switch (IC43: 4053BP, IC39: 4066)
- LZ95S13 (IC16), Tr, /c, R, D, etc.

③ A/D converter block (MP7683 (IC19), etc.)

④ Binary coding processing block

- LZ95S13 (IC16)
- HM6264ALFP (IC12)

Descriptions on each block are given below:

1) CCD drive block

Clock necessary for CCD drive is generated in LZ95S13. Its level is converted from +5V to +12V by 75365. Then it is supplied to the CCD through HC04 (IC35).

- ϕT (Synchronization signal: 1 pulse/5msec)
- ϕ1, ϕ2 (Transmission clock)
- ϕR (Output buffer reset signal)

2) Analog processing block

Video signals supplied from the CCD PWB are sample-held and clamped to supply to the A/D converter.
Peak-hold signal (in fine/standard mode) or fixed voltage (in halftone mode) is supplied to the A/D converter for the reference level of A/D conversion.

3) A/D Converter

An 8-bit, high-speed A/D converter MP7683 (IC19, 24 pin SOP) is used to supply A/D converted digital video signals to the binary coding processing block according to clock signal from LZ95S13.

4) Binary coding processing block

Digital video signals inputted in 8-bit accuracy by gate array LZ95S13 (IC16) which incorporates various algorithms required for binary coding, and RAM (IC12) which stores data necessary for processing which are converted into binary data (0, 1), and S/P converted, and DMA-transmitted to the line memory of the main CPU.
The algorithms for binary coding in the processing block are as follows:

- Shading correction
- Standard OR process
- Focus correction
- Auto contrast process
- Intermediate expression process

LU552B4 (IC26) panel CPU I/O port description

Port address	Signal name	I/O	Description	
P00	MD0	I/O	Gate array I/F data signal (LSB)	
P01	MD1	I/O	"	
P02	MD2	I/O	"	
P03	MD3	I/O	"	
P10	MD4	I/O	"	
P11	MD5	I/O	"	
P12	MD6	I/O	"	
P13	MD7	I/O	" (MSB)	
P20	$\overline{ACK}$	O	Gate array register read signal	
P21	$\overline{STB}$	O	Gate array register write signal	
P22	RSL	O	Gate array register select signal	
P23	—	—	—	
P30	KN10	O	Key matrix output	
P31	KN11	O	Key matrix output	
P32	MRST	O	Peripheral circuit reset signal	
P33	LEDON	O	Document illuminating LED lighting control signal	
P40	$\overline{OBF}$	I	Gate array command output buffer full signal	
P41	IBF	I	Gate array command input buffer full signal	
P42	$\overline{PISGT}$	I	G2 PIS (462Hz) detect signal	
P43	—	—	—	
P50	$\overline{SEN1}$	I	Key matrix input signal	
P51	$\overline{SEN2}$	I	"	
P52	$\overline{SEN3}$	I	"	
P53	$\overline{SEN4}$	I	"	
P60	—	—	—	
P61	DIP SW1	I	DIP switch signal 1	
P62	DIP SW2	I	DIP switch signal 2	
P63	MEMCL	I	DIP switch signal 3	
P70	—	—	—	
P71	—	—	—	
P72	—	—	—	
P73	—	—	—	
P80	LD0	I/O	LCD controller I/F data signal (LSB)	Key matrix output and MPX
P81	LD1	I/O	"	
P82	LD2	I/O	"	
P83	LD3	I/O	"	
P90	LD4	I/O	LCD controller I/F data signal	
P91	LD5	I/O	"	
P92	LD6	I/O	"	
P93	LD7	I/O	" (MSB)	
PA0	E	O	E clock to LCD controller	
PA1	R/W	O	R/W signal to LCD controller	
PA2	RS	O	Register select signal to LCD controller	
PA3	—	—	—	
PB0	—	—	—	
PB1	—	—	—	
PB2	CABS2	O	CABLE SELECT 2	
PB3	CABS1	O	CABLE SELECT 1	

(5) Modem (R96EFX) description

The modem IC has the following modulation and demodulation functions.

No.	Communication mode	Baud rate	Modulation mode	Modulation speed	Carrier frequency	CCITT recommandation
1	G3	9600BPS	16 value QAM	2400 baud	1700Hz	V29
2	G3	7200	8 value QAM	2400	1700	V29
3	G3	4800	8 phase PSK	1600	1800	V27ter
4	G3	2400	4 phase PSK	1200	1800	V27ter
5	G3	300	FSK	300	1650/1850	V21
6	G2		AM-PM-VSB		2100	T3

In addition to the above functions, the modem has the following tonal transmit and tonal detect functions.

Tonal transmit

No.	Signal name	Frequency
1	CED	2100Hz
2	GI	1850
3	GC	2100
4	CFR	1650
5	MCF	1650
6	LCS	1100
7	EOM	1100
8	PIS	462

Tonal detect

No.	Signal name	Frequency
1	GI	1850Hz
2	CFR, MCF	1650
3	GC	2100

The interface memory inside the modem is accessed by the main CPU (IC25) on the control board via the data bus, to control the above function. The interface memory consists of 32 x 8-bit registers which are controlled with a bank select signal. That is, each register is selected by the 4-bit register select signal (RS3 to RS0) and chip select signal ($\overline{CS0}$, $\overline{CS1}$). The following are controlled by these registers.

1) Configuration register

   V29, V27, G2, FSK and tonal transmit mode setting

2) Option register
   Equalizer setting, carrier detect threshold, echo suppressor protect tone suffix, transmit, and receive mode setting

3) Others
   G2AGC control and tonal frequency setting

By reading data from these registers on the data bus, the state of the modem is monitored for line tone detection and training pattern detection.

The following discusses the transmit and receive operations.

In the transmit mode, the transmit data is transferred from the control board to the modem on the data bus. The data is then modulated by the modem and transferred to the LIU board through the transmit analog output line (TXOUT).

In the receive mode, the received analog input (RXA) data is transferred from the LIU board to the modem where it is demodulated. The data is then transferred to the control board via the data bus.

All above operations are done by a MODEM LSI (IC4) on the control board.

The following lists interface signals.

The transmission output level adjusting attenuator and PIS detect circuit are contained in the LIU board.

Table 6. R96EFX Hardware Interface Signals

Name	Type*	Pin No.	Description
A. Power:			
AGND1	GND	22	Connect to Analog Ground
AGND2	GND	24	Connect to Analog Ground
DGND1	GND	13	Connect Digital Ground
DGND2	GND	49	Connect to Digital Ground
+5VA	PWR	31	Connect to Analog +5V Power
+5VD	PWR	10	Connect to Digital +5V Power
−5VA	PWR	25	Connect to Analog −5V Power
B. Microprocessor Interface:			
D7	IA/OB	50	↑
D6	IA/OB	51	|
D5	IA/OB	52	|
D4	IA/OB	53	8-Bit Data Bus
D3	IA/OB	54	|
D2	IA/OB	55	|
D1	IA/OB	56	|
D0	IA/OB	57	↓
RS4	IA	62	↑
RS3	IA	63	|
RS2	IA	64	Register Select (5 bits)
RS1	IA	1	|
RS0	IA	2	↓
$\overline{CS}$	IA	60	Chip Select
$\overline{READ}$-φ2	IA	61	Read Strobe (808X), φ2 Clock (65XX)
$\overline{WRITE}$-R/$\overline{W}$	IA	59	Write Strobe (808X), R/$\overline{W}$ (65XX)
$\overline{IRQ}$	OC	58	Interrupt Request
C. V.24 Interface			
$\overline{RTS}$	IA	48	Request to Send
$\overline{CTS}$	OA	14	Clear to Send
TXD	IA	15	Transmit Data
RXD	OA	45	Received Data
$\overline{RLSD}$	OA	46	Received Line Signal Detected
DCLK	OA	16	Transmit and Receive Data Clock
D. Cable Equalizer			
CABLE1	IB	32	Cable Select 1
CABLE2	IB	33	Cable Select 2
E. Analog Signals			
TXOUT	AA	28	Connect to Smoothing Filter Input
RXIN	AB	37	Connect to Anti-aliasing Filter Output
AUXI	AC	26	Auxiliary Analog Input

Table 6. R96EFX Hardware Interface Signals (Cont'd)

Name	Type*	Pin No.	Description
F. Overhead			
$\overline{PORO}$	OA	43	Power-On-Reset Output
$\overline{PORI}$	IA	5	Power-On-Reset Input
DCLKI	R	11	Connect to DCLK
ECLKIN1	R	30	Connect to EYECLK
ECLKIN2	R	38	Connect to EYECLK
SYNCIN1	R	41	Connect to EYESYNC
SYNCIN2	R	12	Connect to EYESYNC
XTLI	R	6	Connect to Crystal Circuit or Oscillator
XTLO	R	7	Connect to Crystal Circuit or Float
12MHz	OD	8	12MHz Output
6MHz	OD	9	6MHz Output
RCVI	R	34	Connect to RCVO
RCVO	R	47	Mode Select Output
ADIN	R	20	Connect to ADOUT
ADOUT	R	39	ADC Output
DAIN	R	40	Connect to DAOUT
DAOUT	R	21	DAC/AGC Output
$\overline{EN85}$	R	4	Connect to Resistor for Bus Selection
AEE	R	29	Connect Analog Ground
AGCIN	R	23	AGC Input
AOUT	R	36	Smoothing Filter Output
FIN	R	35	Connect to FOUT
FOUT	R	27	Smoothing Filter Output
RCI	R	42	RC Junction for POR Time Constant
G. Reserved			
	R	3	Do Not Connect
H. Serial Diagnostic Interface			
EYEX	OA	19	Serial Eye Pattern X Output
EYEY	OA	44	Serial Eye Pattern Y Output
EYECLK	OA	18	Serial Eye Pattern Clock (230.4kHz)
EYESYNC	OA	17	Serial Eye Pattern Strobe (9600Hz)

(6) Sub CPU description

1) Sub CPU (HD64180)

The sub CPU mainly controls the laser printer. Coded data is decoded into image data and developed in the page memory. The developed image data is DMA-transmitted to the laser printer by using the video control section. With that operation, various controls for the laser printer are performed through gate array LZ95H30. The system clock operates on 12.2MHz (6.1MHz:internal actual operation).

DMA section

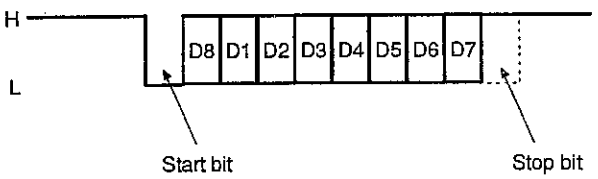
① DMA0
This transmits coded data (which is passed from the main CPU by DMA) to the memory.

② DMA1
This transmits video data to the laser printer (IP-1A).

ASCI section

① ASCI0
Used for serial transmission (CMD/STS) with the laser printer.

- Transmission rate: 9600bps
- Start bit: 1 bit
- Data length: 8 bit
- Stop bit: 1 bit
- Parity bit: None



TTL level

② ASCI1
Used for serial transmission with the main CPU. Transmission clock uses CKS terminal. External clock is used for transmission.

2) ROM (27C256) (IC1)

The ROM stores the firmware of the sub CPU.

3) DRAM

There are six DRAM's (768KB in total) provided. 4KB is used for the work area of CPU, 128KB for storing coded data from the main CPU, and 636KB as page memory for storing image data.
Refresh signal is supplied from the CPU (HD64180) and CPU access is made in 1 wait.

4) Gate array (LZ95H30)

This gate array has the following functions with connection to the sub CPU (HD64180).

1. Interface between the main CPU and the sub CPU
2. Memory mapping
3. DRAM control
4. DMA request signal control
5. Video data process (Thin-out, OR processing, P/S change, Smoothing processing etc.)
6. Interface between the sub CPU and the PCU.

The pin descriptions are as follows:

Pin descriptions

No.	Pin name	I/O	Descriptions
1	$\overline{SMRD}$	O	Sub-CPU system ROM select output signal
2	Sϕ	I	Sub CPU system, system clock input.
3	$\overline{RESET}$	I	Reset signal input
4	SA0	I	Sub CPU system adress bus bit 0
5	SA1	I	Sub CPU system adress bus bit 1
6	SA2	I	Sub CPU system adress bus bit 2
7	SA3	I	Sub CPU system adress bus bit 3
8	SA4	I	Sub CPU system adress bus bit 4
9	SA5	I	Sub CPU system adress bus bit 5
10	SA6	I	Sub CPU system adress bus bit 6
11	SA7	I	Sub CPU system adress bus bit 7
12	SD0	I/O	Sub CPU system data bus bit 0
13	SD1	I/O	Sub CPU system data bus bit 1
14	SD2	I/O	Sub CPU system data bus bit 2
15	SD3	I/O	Sub CPU system data bus bit 3
16	VCC		Power supply
17	GND		GND
18	SD4	I/O	Sub CPU system data bus bit 4
19	SD5	I/O	Sub CPU system data bus bit 5
20	SD6	I/O	Sub CPU system data bus bit 6
21	SD7	I/O	Sub CPU system data bus bit 7
22	SA8	I	Sub CPU system adress bus bit 8
23	SA9	I	Sub CPU system adress bus bit 9
24	SA10	I	Sub CPU system adress bus bit 10
25	SA11	I	Sub CPU system adress bus bit 11
26	SA12	I	Sub CPU system adress bus bit 12
27	SA13	I	Sub CPU system adress bus bit 13
28	SA14	I	Sub CPU system adress bus bit 14
29	SA15	I	Sub CPU system adress bus bit 15
30	SA16	I	Sub CPU system adress bus bit 16
31	SA17	I	Sub CPU system adress bus bit 17
32	SA18	I	Sub CPU system adress bus bit 18
33	SA19	I	Sub CPU system adress bus bit 19
34	$\overline{SLIR}$	I	Sub CPU system $\overline{LIR}$ signal input
35	$\overline{REF}$	I	Refresh request signal input
36	$\overline{SME}$	I	Sub CPU system memory device enable signal input
37	$\overline{SIOE}$	I	Sub CPU system I/O device enable signal input
38	$\overline{SRD}$	I	Sub CPU system read control signal input
39	$\overline{SWR}$	I	Sub CPU system write control signal input
40	$\overline{DREQ0}$	O	Output of DMA transfer request signal 0 to the sub CPU
41	$\overline{DREQ1}$	O	Output of DMA transfer request signal 1 to the sub CPU (When HMODE = 1, : $\overline{SINT0}$ = $\overline{BUSREQ}$)
42	$\overline{SINT0}$	O	Output of print data transfer address input request signal (Interrupt of end of 1 line print)
43	$\overline{SINT1}$	O	Output of coded data transfer request signal from the main system
44	$\overline{SACK}$	I	Input of $\overline{BUSACK}$ signal, when print data transfer. (When HMODE "0", $\overline{SACK}$ is connect to +5V.)
45	PC22	I/O	Main system port output bit 2 (when TEST pin is grounded). Test input (when TEST pin is HIGH.)

No.	Pin name	I/O	Descriptions
46	PC21	I/O	Main system port output bit 1 (when TEST pin is grounded). Test input (when TEST pin is HIGH.)
47	PC20	I/O	Main system port output bit 0 (when TEST pin is grounded). Test input (when TEST pin is HIGH.)
48	TEST	I	Test pin
49	GND		GND
50	VCC		Power supply pin
51	SIBF	O	Output pin of code data transfer buffer state signal from the main system
52	THIN	O	Thinning-out timing check pin
53	PRITW	O	"Print effective" check pin
54	IOWR	I	Main system register write control signal input
55	IORD	I	Main system register read control signal input
56	CS	I	Chip select input pin (Main CPU system)
57	MS0	O	Output pin of memory device 0 select signal under main CPU control
58	MS0	O	Output pin of memory device 1 select signal under main CPU control
59	E	I	Main CPU system E clock input pin
60	MREQ	I	Main CPU system memory device enable signal input pin
61	A0	I	Main CPU system adress bus bit 0
62	A13	I	Main CPU system adress bus bit 13
63	A14	I	Main CPU system adress bus bit 14
64	<N.C.>		NC (Connect to GND.)
65	PC10	O	Main system output port bit 3 (I/O adress *1H)
66	A15	I	Main CPU system adress but bit 15
67	A16	I	Main CPU system adress but bit 16
68	A17	I	Main CPU system adress but bit 17
69	A18	I	Main CPU system adress but bit 18
70	A19	I	Main CPU system adress but bit 19
71	GND		GND
72	CD0	I/O	Main CPU system data bus bit 0
73	CD1	I/O	Main CPU system data bus bit 1
74	CD2	I/O	Main CPU system data bus bit 2
75	CD3	I/O	Main CPU system data bus bit 3
76	CD4	I/O	Main CPU system data bus bit 4
77	CD5	I/O	Main CPU system data bus bit 5
78	CD6	I/O	Main CPU system data bus bit 6
79	CD7	I/O	Main CPU system data bus bit 7
80	VCC		Power supply pin
81	GND		GND
82	RAMSL	I	Main CPU system control adress area control (for RAM)
83	ROMSL	I	Main CPU system control adress area control (for ROM)
84	MS2	O	Output pin of memory device 2 select signal under the main CPU control
85	PSS4	O	Output pin of memory device 7 select signal under the main CPU control
86	PSS3	O	Output pin of memory device 6 select signal under the main CPU control
87	PSS2	O	Output pin of memory device 5 select signal under the main CPU control
88	PSS1	O	Output pin of memory device 4 select signal under the main CPU control
89	PSS0	O	Output pin of memory device 3 select signal under the main CPU control

No.	Pin name	I/O	Descriptions
90	READY	I	Input pin of print enable state signal from LBP
91	CRDY	I	Input pin of command communication control signal from LBP
92	CLK	I	Input pin of serial data transfer clock to LBP
93	HSYNC	I	Print data 1 line cycle signal input pin
94	PRIM	O	Output pin of PRIM signal to LBP
95	SRDY	O	Output pin of state communication control signal to LBP
96	GND		GND
97	<N.C>		NC (Connect to GND.)
98	DATA	O	LBP print data output pin
99	PAGE	O	Output pin of print start request signal to LBP
100	SWE0	O	Sub CPU system WE code 0 for DRAM
101	SWE1	O	Sub CPU system WE code 1 for DRAM
102	SWE2	O	Sub CPU system WE code 2 for DRAM
103	GND		GND
104	SMD0	I/O	Sub CPU system data bus bit 0 for DRAM
105	SMD1	I/O	Sub CPU system data bus bit 1 for DRAM
106	SMD2	I/O	Sub CPU system data bus bit 2 for DRAM
107	SMD3	I/O	Sub CPU system data bus bit 3 for DRAM
108	SMD4	I/O	Sub CPU system data bus bit 4 for DRAM
109	SMD5	I/O	Sub CPU system data bus bit 5 for DRAM
110	SMD6	I/O	Sub CPU system data bus bit 6 for DRAM
111	SMD7	I/O	Sub CPU system data bus bit 7 for DRAM
112	VCC		Power supply pin
113	GND		GND
114	MA0	O	Adress bus bit 0 for the sub CPU system DRAM
115	MA1	O	Adress bus bit 1 for the sub CPU system DRAM
116	MA2	O	Adress bus bit 2 for the sub CPU system DRAM
117	MA3	O	Adress bus bit 3 for the sub CPU system DRAM
118	MA4	O	Adress bus bit 4 for the sub CPU system DRAM
119	GND		GND
120	MA6	O	Adress bus bit 6 for the sub CPU system DRAM
121	MA7	O	Adress bus bit 7 for the sub CPU system DRAM
122	MA8	O	Adress bus bit 8 for the sub CPU system DRAM
123	MA5	O	Adress bus bit 5 for the sub CPU system DRAM
124	RAS0	O	RAS signal 0 for the sub CPU system
125	RAS1	O	RAS signal 1 for the sub CPU system
126	RAS2	O	RAS signal 2 for the sub CPU system
127	CAS	O	CAS signal for the sub CPU system
128	<N.C.>		NC (Connect to GND.)

[3] LIU board circuit description

1.General

Telephone interface circuitry for this facsimile is mounted on one circuit board unit and is interfaced with the telephone line and facsimile circuits via connectors.
Connection to the switched telecommunication network is carried out by means as of the magnetic relay. Power required for the control of the unit is supplied from the power supply unit of the facsimile +12V, –12V, +5V.

2. Functions

* Dialing
Dialing is done on the telephone set that connected to the facsimile, or on automatic dialing circuit which generate DTMF or rotary dial pulse in the facsimile.

* Ring detect
As the ring detect circuit is implemented in the unit, it allows automatic receive.

3. Operation theory

3-1. DC loop

The DC loop circuit consists of L1, IC1, RY1, RY2, T1 and R8 or R9.

3-2. Automatic dialing

3-2-1. Automatic dialing

After detecting DC loop current and Dial tone, Automatic dialing is active.

3-2-2. DTMF

After forming the DC loop by the action of the RY1 and RY2 and DTMF through the Line 1/Line 2 is sent on the telephone line.

3-2-3. Rotary dial pulse

After forming the DC loop by the action of RY1, RY2 and PC4, the dial pulse is sent out by the repeating on/off action of the RY2.

3-3. Ring detct

The ring detect circuit consists of C5, D2, ZD1, PC1, R1.
Ring detection is accompanied by ac coupling (via C5) the ring signal through a half wave rectifier (D2) to drive the LED in optocoupler (PC2).
Collector current approportionate to light intensity flows through the optotransistor, and delivered as the CI (calling indicator) signal.

3-4. Connection

Connection of the facsimile to the telephone line is done by means of the RY1, of which sequence is as described below.

(Connect)
Activation of START button or programing start (timer start) – RY1 high state (5V) – activation of the RY1.

(Disconnect)
Completion or failure of facsimile communication – RY1 to low state (ground) – deactivation of the RY1.

[4] CCD board description

The CCD board picks up optical information from the document, converts it into an electrical (analog) signals and transfers it to the control board.

(1) Block diagram

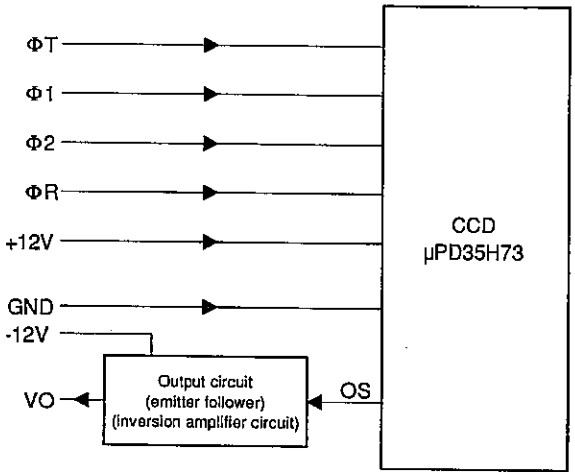


Fig. 10

(2) Description of blocks

1. CCD

The UPD35H73 is a highly sensitive charged coupled image sensor that consists of 2048 picture elements.
Receiving four drive signals (φT, φ1, φ2, φR) from the control board (X437SC), the transferred photoelectric analog signal OS is impedance converted, and the signal VO, that is inverted and amplified by about 6.8 times the gain, is supplied to the control board.

2. Output circuit

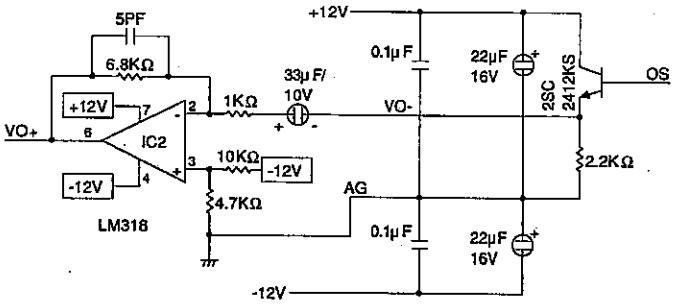


Fig. 11

3. Waveforms

1. φ1, φ2 (=-φ1) –CP1 (signals within the control board)

2. OS φR

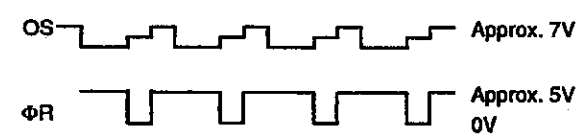


Fig. 12

[6] PCU board circuit description

The PCU consists of the following circuits:
1. CPU peripheral circuit
2. MCU interface circuit
3. Print control peripheral circuit
4. OPU control circuit
5. Print process control circuit

BLOCK DIAGRAM

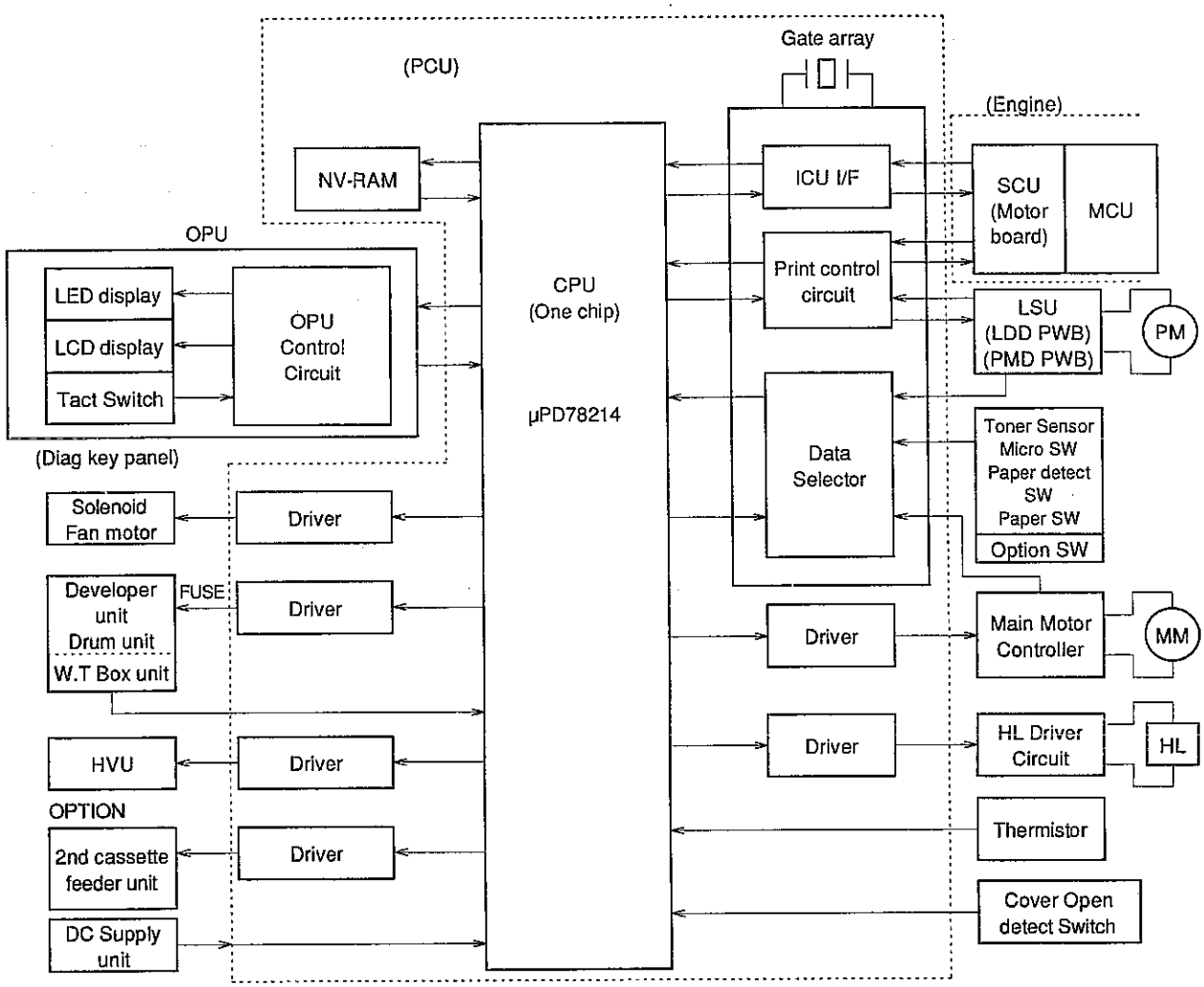


Fig. 1

Legend:-

LSU:	Laser scanning unit
PCU:	Process control unit
LDD PWB:	Laser diode drive printed wire board
PMD PWB:	Polygonal motor drive printed wire board
HL:	Heater lamp
OPU:	Operation unit
HVU:	High voltage unit
MCU:	Main control unit

1. CPU peripheral circuit

The µPD78214 used in the PCU is a single chip microcomputer, which includes program memory ROM and work RAM.
For data backup, data are loaded/stored from/to the NVRAM (Non-Volatile RAM) externally connected to the CPU when the power is turned ON/OFF.

1-1. CPU

The µPD78214 is used to control the printer mechanism and to perform interface between MCU and OPU.
The µPD78214 is an 8-bit single chip microcomputer including 16K byte mask ROM and 512 byte RAM, having 16bit timer/counter, 8bit timer counter, 2 channels of serial interface, 8 channels of 8bit A/D converter, and 54 I/O ports.
The CPU is used in the internal ROM mode.

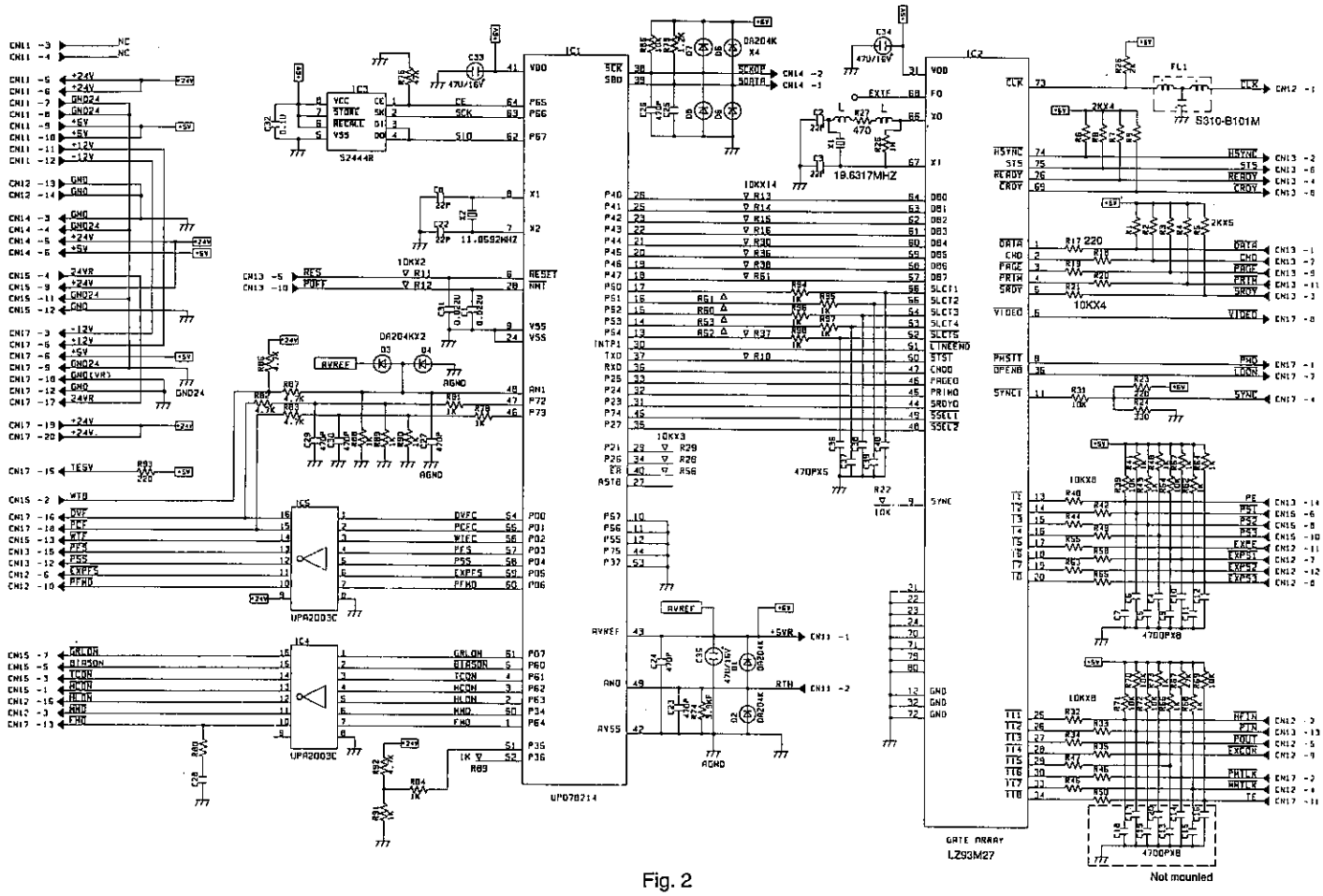


Fig. 2

CPU Terminal arrangement

Pin No.	In/Out	Signal name	Function
1	O	FMD	FMDFan motor control signal, H: Fan motor ON
2	O	HL ON	Heater lamp control signal, H: Heater lamp ON
3	O	MC ON	Main corona control signal, H: Main corona ON
4	O	TCON	Transfer corona control signal, H: Transfer corona ON
5	O	$\overline{\text{BIASON}}$	Bias control signal, L: Bias ON
6	I	$\overline{\text{RES}}$	CPU reset signal
7	—	—	NC
8	I	EXTF	CPU clock input
9	—	GND	GND (0V)
10–12	—	—	GND
13	O	$\overline{\text{SLCT5}}$	G/A internal select signal
14–17	O	SLCT4–1	G/A internal counter select signal /G/A input port select signal
18–23, 25–26	O	DB7–0	G/A internal counter set data signal /G/A internal control signal with MCU
24	—	GND	GND (0V)
27	—	—	NC
28	I	$\overline{\text{POFF}}$	Power OFF signal
29	—	—	Pull up
30	I	$\overline{\text{LINE END}}$	Line end signal from G/A LSU control circuit
31	I	SRDY	Status ready signal from MCU
32	I	PRIM	Prime (Initialize request) signal from MCU

Pin No.	In/Out	Signal name	Function
33	I	PAGE	Print start signal from MCU
34	—	—	Pull up
35	I	$\overline{\text{SSEL2}}$	Data input signal 2 from data selector in G/A
36	I	CMD	Command input signal from MCU
37	O	$\overline{\text{STS}}$	Status output signal to MCU
38	O	$\overline{\text{SCKOP}}$	Data clock signal to OPU
39	I/O	SDATA	Key input status from OPU/display data signal to OPU
40	—	—	Pull up
41	—	VDD	+5V
42	—	AGND	Analog port GND (0V)
43	—	AVREF	+5V
44	—	—	GND
45	I	$\overline{\text{SSEL1}}$	Data input signal 1 from data selector in G/A
46	I	$\overline{\text{PCF}}$	Drum unit fuse detect signal
47	I	$\overline{\text{DVF}}$	DV unit fuse detect signal
48	I	WTB	Waste toner box detect signal
49	I	RTH	Thermistor input signal
50	O	MMD	Main motor control signal, H: Main motor ON
51	I	$\overline{\text{DOP}}$	Cover open detect signal
52	—	—	Pull up
53	—	—	GND
54	O	DVFC	DV unit fuse cut signal, H: Fuse cut
55	O	PCFC	Drum unit fuse cut signal, H: Fuse cut
56	O	WTFC	Waste toner box fuse cut signal, H: Fuse cut
57	O	PFS	Paper feed solenoid control signal, H: PFS ON
58	O	PSS	Paper stopper solenoid control signal, H: PSS ON
59	O	EXPFS	Second cassette feeder PFS control signal, H: EXPFS ON
60	O	PFMD	Second cassette feeder motor control signal, H: PFM ON
61	O	GRLON	Screen grid bias control signal
62	I/O	SIO	Data signal to/from NVRAM
63	O	SCK	Clock signal to NVRM
64	O	CE	NVRAM chip enable signal

1-2. Non-volatile RAM (NVRAM)

The S2444R is a 256-bit non-volatile CMOS RAM which consists of 16 words x 16 bits. Data is transferred via single serial data bus.

Every bit of this RAM is backed up by an electrically erasable non-volatile memory (EEPROM). Data transfer between the RAM and the E2PROM takes place by a command from the processor, $\overline{\text{STORE}}$, and $\overline{\text{RECALL}}$. (In the case of the PCU, a command from the processor is used.)

While the non-volatile data is stored in the EEPROM, the RAM data is used for read and write. It does not require high voltage pulse and power supply, only a single +5V supply is required. All inputs and outputs are TTL compatible.

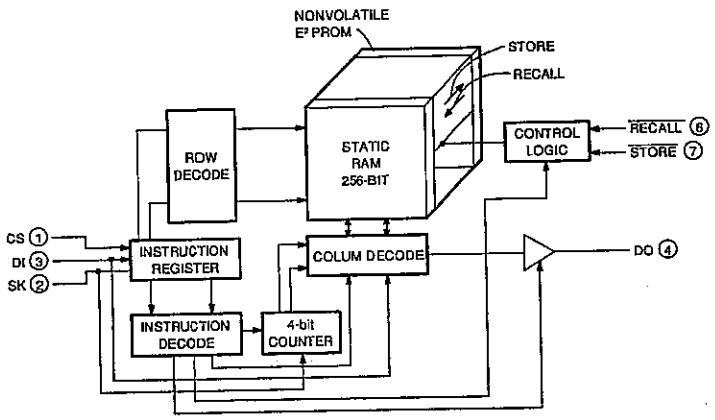
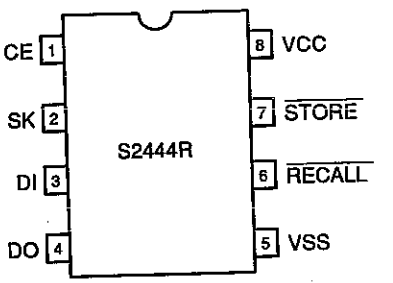


Fig. 3 S244R (16X16) Block Diagram



CE	Chip Enable
SK	Serial Clock
DI	Serial Data In
DO	Serial Data Out
$\overline{\text{RECALL}}$	Recall
$\overline{\text{STORE}}$	Store
VCC	+5V
VSS	Ground

Fig. 4 Pin Configuration and Names

The NVRAM stores the following:

(1) Life counter content

(2) Top margin and left margin

(3) Error content when power is turned off.

INSTRUCTION SET		
Instruction	Operation	
WRDS	Reset Write Enable Latch (Disables writes and stores)	
STO	Store RAM data in E2PROM	
SLEEP	Enter SLEEP Mode	
WRITE	Write Data into RAM Address	AAAA
WREN	Set Write Enable Latch (Enables writes and stores)	
RCL	Recall EEPROM Data into RAM	
READ	Read Data from RAM Address	AAAA

Table 1

(1) Recall

When recall is commanded, the data in the non-volatile EEPROM are transferred to the RAM.

(2) Store

When store is commanded, the data in the RAM is transferred in the EEPROM to revise the data within the EEPROM.

(3) Read/write memory

The RAM is accessed with a READ or WRITE command.

1-3. PCU power on/off sequence

The figure below shows the power on/off sequence of the CPU.

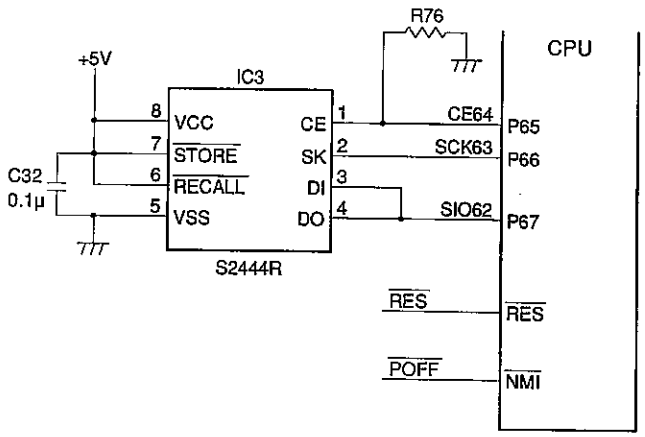


Fig. 5

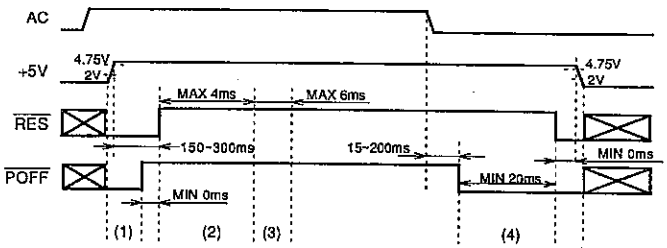


Fig. 6

(1) After the AC power is turned on, both $\overline{RES}$ and $\overline{POFF}$ are set low for more than the prescribed period when the +5V line is above 2V.

(2) After $\overline{RES}$ is reset to high, the CPU starts executing the program to perform a series of operations; initializing ports, checking ROM and RAM, clearing RAM, and a series of initializetion operations.

(3) After (2) has been completed, the CPU accesses the NV-RAM. With the execution of an RCL command, data within the EEPROM is transferred to the RAM in the NV-RAM. As a READ command is executed next, the RAM data in the NV-RAM is transferred to the work RAM within the CPU.

(4) When the AC power is turned off, $\overline{POFF}$ is issued from the DC power supply and the CPU executes the non-maskable interrupt. The CPU turns off, loads and transfers the backup data to the NV-RAM in this interrupt. As the write command is executed, the data in the work RAM is transferred to the RAM in the NV-RAM. As the STO command is executed next, the RAM data in the NV-RAM is sent to the EEPROM in the NV-RAM to save the data against power off.

2. MCU interface circuit

The interface between the MCU and the PCU is called a video interface whose configuration is shown in Fig. 7. All signals are LS-TTL level and its I/O circuit is shown in Fig. 8.

The following are two kinds of video interfaces.

(1) Serial interface

(2) Single line signal

Figure 7 shows an outline of the interface signals.

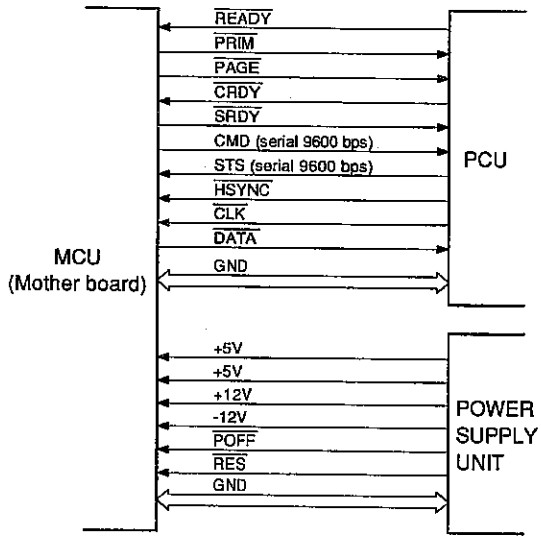


Fig. 7

VIDEO I/F Input/Output circuits

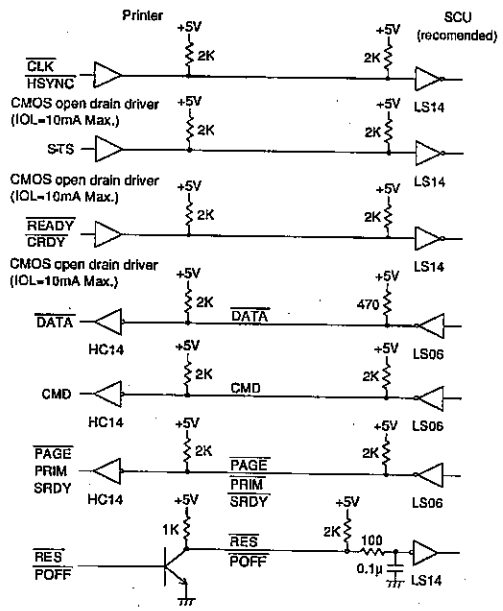


Fig. 8

2-1. Serial interface

CMD and STS are the serial lines used to exchange control information between the PCU and the MCU.

The MCU requests the PCU to perform various operational and status information via the CMD line and OPU (operational unit) and printer engine related status information from the PCU via the STS line.

NOTES:

(1) STS: Status line (from PCU to MCU)
CMD: Command line (from MCU to CPU)

(2) Serial Interface Hardware Specifications

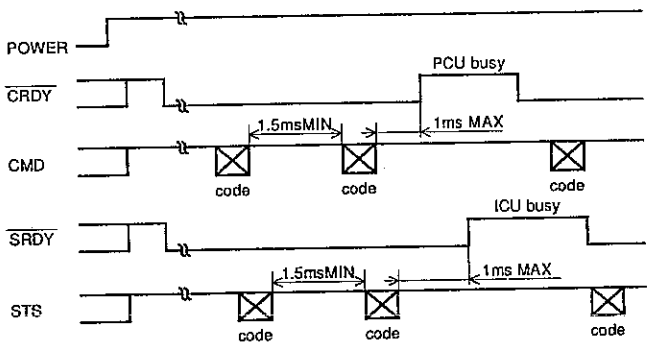
Baud rate: : 9600 bps
Character length : 8 bits
Start bit: : 1 bit
Stop bit: : 1 bit
Parity bit: : None
System: : Full duplex asynchronous

Serial interface of the PCU is performed by using the serial interface circuit included in the single chip CPU (uPD78210). CMD is processed in the interruption program routine after completion of reception of 1 byte signal by the PCU.

For MCU, transmission interval of two 1-byte codes must be min. 1.5 msec when transmitting control code or status code.

The PCU currently transmits and receives signals in a 3msec interval.

Exchange timing of CMD and STS signals



Command table between the MCU and the PCU is shown below:

Table 2. Control code exchange procedures 1/3

CONTROL CODE		PROCEDURE			FUNCTION
HD*	NAME	MCU	LINE	PCU	
80+	SSA	80	→ ←	80,STSA	Status Sense A. MCU reads status A from PCU.
81+	SSB	81	→ ←	81,STSB	Status Sense B. MCU reads status B from PCU.
82+	SSC	82	→ ←	82,STSC, STSD	Status Sense C, D. MCU reads status from PCU.
84	LEDR	84	→ ←	84,LEDS	LED Status Read. MCU reads staus of LED lights on control panel.
85	SWR	85	→ ←	85,SW1S, SW2S	Switch Status Read. MCU reads status of switches on control panel.
86	PSZR	86	→ ←	86,SIZE	Paper Size Read. MCU reads status of paper size.
87	LIFE1	87	→ ←	87,X1,X2, X3	MCU reads remaining life counter of drum cartridge.

NOTE: X1, Y1, Z1 upper; X2, Y2, Z2 middle; X3, Y3, Z3 lower two digits

* : Control code in 2-digits hexadecimal number.
+ : Important control code.
LINE: → for CMD line, and ← for STS line.

Table 3. Control code exchange procedures 2/3

CONTROL CODE		PROCEDURE			FUNCTION
HD*	NAME	MCU	LINE	PCU	
88	LIFE2	88	→ ←	88,Y1,Y2, Y3	MCU reads remaining life counter of developer cartridge.
89	LIFE3	89	→ ←	89,Z1, Z2,Z3	MCU reads remaining life counter of printer.
8A+	LFOV	8A	→ ←	8A,LIFE	Life over MCU read status of life over from PCU.
8B	OPSR	8B	→ ←	8B, OPTION	Optional Status Read MCU reads status of optional products.
8F	ROMNO	8F	→ ←	8F, ROMNO	PCU ROM Revision Number MCU reads the revision number of the PCU software.
90+	SWSCHG		←	90,SW1S, SW2S	Switch Status Changed. PCU sends switch status to MCU when there is a status change of switches on control panel.
92+	PEJCT		←	92	Paper eject. PCU sends status to MCU when paper is out on the output tray.
93+	PCUER		←	93	PCU Error. This code indicates error detected in PCU.
94	PCHSTD		←	94	Paper size change of the standard tray.
95	PCHOPT		←	95	Paper size change of the optional tray.
96	PGACK		←	96	Acknowledge of PAGE signal.
A1+	TRSELT	A1, TRAY	→		Paper Tray select PCU selects paper tray by TRAY.
A3	PMSTT	A3	→		Polygon Motor Start. Polygon motor is also started by PAGE signal.

NOTE: X1, Y1, Z1 upper; X2, Y2, Z2 middle; X3, Y3, Z3 lower two digits

* : Control code in 2-digits hexadecimal number.
+ : Important control code.
LINE: → for CMD line, and ← for STS line.

Table 4. Control code exchange procedures 3/3

CONTROL CODE		PROCEDURE			FUNCTION
HD*	NAME	MCU	LINE	PCU	
A4+	PERST	A4	→		PCU Error Reset. MCU resets PCU errors that are resettable.
A5	BUZZER	A5	→		Buzzer Buzzer beeps for 0.3sec.
A6	BZON	A6	→		Buzzer on Buzzer is beeping untill A7 command is send.
A7	BZOFF	A7	→		Buzzer off
B0+	LEDON	B0,LEDS	→		LED Indicator On. PCU turns on LED lights according to LEDS.
B1	LEDBK	B1,LEDS	→		Operation Panel LED Blinking Start.
C1+	LCDCDP	C1,DDA, CGA	→		LCD Character Display. Character addressed by CGA in character generator is displayed on LCD cell addressed by DDA.
C2	LCDCBK	C2,DDA	→		LCD Character Blinking Start. Character on LCD cell addressed by DDA starts Blinking.
C3	LCDCB0F	C3,DDA	→		LCD Character blinking Stop. Character on LCD cell addressed by DDA stops Blinking.
C4	LCDDCL	C4	→		LCD Display Clear. All characters on LCD panel are cleared.
C5	LCDPOS	C5,DDA	→		LCD Positioning. MCU designates the position on LCD cell addressed by DDA.
C6	LCDCHR	C6,CGA1,CGA2,------ CGAn,NUL(00)	→		LCD Character strings MCU sends the character strings to LCD panel.

NOTE: X1, Y1, Z1 upper; X2, Y2, Z2 middle; X3, Y3, Z3 lower two digits

* : Control code in 2-digits hexadecimal number.
+ : Important control code.
LINE: → for CMD line, and ← for STS line.

Table 5. Status Codes, STSA to STSD

Bit	STSA, PCU Status	STSB, Operator Call	STSC, Hardware	Error (1)	STSD, Hardware Error (2)
D7	0	0	0	0	0
D6	Warm-up	Toner Empty	PCUROM Error	Optical System Error	Drum Cartridge Life over
D5	Operator Call	Paper Empty	PCU RAM error	Main Motor Defective	Developer Cartridge Life over
D4	Hardware Error	PaperJam	NV-RAM Error	PlgnMotor Defective	Printer Life over
D3	0	Printer Open	Serial Commu-nication Error	Heater High Temper-ature	0
D2	Manual Feed SW ON	Waste Toner Box Change	0	Heater Low Tem-perature	0
D1	PCU Diagnostic test	0	0	Termistor open	0
D0	Life over	0	0	0	0

Logic One (1) for Set, and Logic Zero (0) for Reset.

2-2. Single line signal

As mentioned STS and CMD are used to do serial signal transfer between the PCU and the MCU, but, the following single line signal is also used.

(1) Print control signals
- $\overline{\text{SRDY}}$
- $\overline{\text{CRDY}}$
- $\overline{\text{READY}}$
- $\overline{\text{PRIM}}$

(2) Print related signals
- $\overline{\text{PAGE}}$
- $\overline{\text{HSYNC}}$
- $\overline{\text{CLK}}$
- $\overline{\text{DATA}}$

Those are print related signals and will be discussed in more detail in Para 3-3, "Print control circuit".

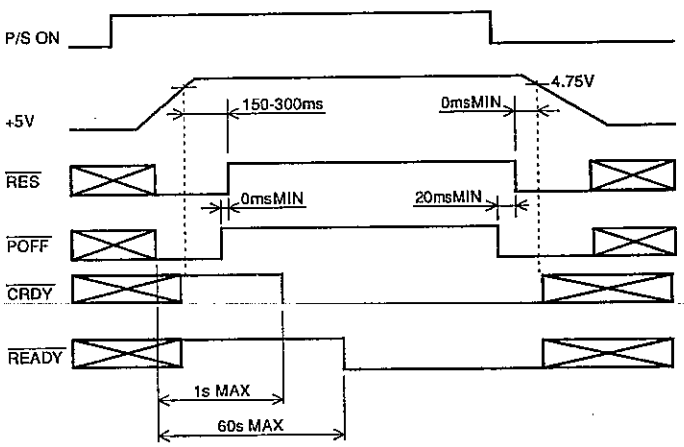
Table 7. Functions of interface signals

SIGNAL	DIRECTION	FUNCTION
$\overline{\text{READY}}$	MCU ← PCU (Ready)	L for ready to print. H for warm-up, error detected or printer busy.
$\overline{\text{PRIM}}$	MCU → PCU (Prime)	Initialize request to PCU. Active L state. When the printer is busy, this request is held until one page printing is completed.
$\overline{\text{PAGE}}$	MCU → PCU (Page)	Print start request to PCU. It should be L during transmission of one pageful of data. When this signal is received and provided that there is no error, PCU will start operation.
$\overline{\text{HSYNC}}$	MCU ← PCU (Horizontal Sync)	Sync signal for line-by-line printing. This signal indicates start timing of each line.
$\overline{\text{CLK}}$	MCU ← PCU (Clock)	Synchronization clock for print video data receiving. MCU, after receiving an HSYNC pulse, sends video data in synchronization with this clock.
$\overline{\text{DATA}}$	MCU → PCU (Data)	Print video data line. L level for black and H level for white. To be kept H after transmission of one line of data.
CMD	MCU → PCU (Command)	Command sending line to PCU. MCU sends various commands to PCU through this line.
STS	MCU ← PCU (Status)	Status sending line from PCU. MCU receives status information from PCU through this line.
$\overline{\text{SRDY}}$	MCU → PCU (Status Ready)	L for ready to receive STS signal from the PCU. When this signal is H, STS signal is ignored.
$\overline{\text{CRDY}}$	MCU ← PCU (Command Ready)	L for ready to receive CMD signal from the MCU. When this signal is H, CMD signal is ignored.

2-3. Descriptions on $\overline{\text{CRDY}}$, $\overline{\text{READY}}$, $\overline{\text{PRIM}}$

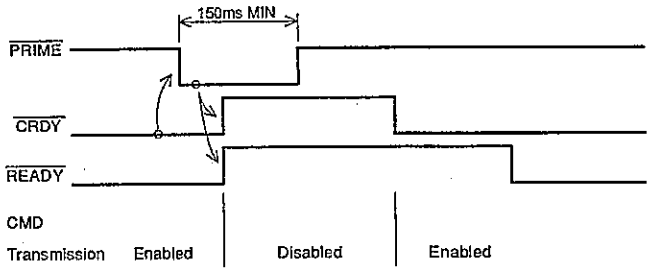
Power-On Sequence and Initialize Request

(1) Power ON sequence



When the power is turned ON, the circuit is initialized (RAM is cleared, etc.) and then $\overline{\text{CRDY}}$ is driven to LOW, displaying that the interface block between the MCU and PCU excepting the print process block is in ready state.
On the other hand, $\overline{\text{READY}}$ is driven to LOW when warming up of the heater is completed.

(2) Prime processing sequence



Sequence:

(1) When the MCU confirms that CMD is not in transmission and that $\overline{\text{CRDY}}$ is at LOW, $\overline{\text{PRIM}}$ signal is transmitted to the PCU. ($\overline{\text{PRIM}}$ pulse width requires min. 150msec.)

(2) After the PCU receives $\overline{\text{PRIM}}$ signal, $\overline{\text{CRDY}}$ signal and $\overline{\text{READY}}$ signal are driven to HIGH at timing when STS is not in transmission. (In this case, the PCU does not require to send STS which corresponds to the last CMD from the MCU.)

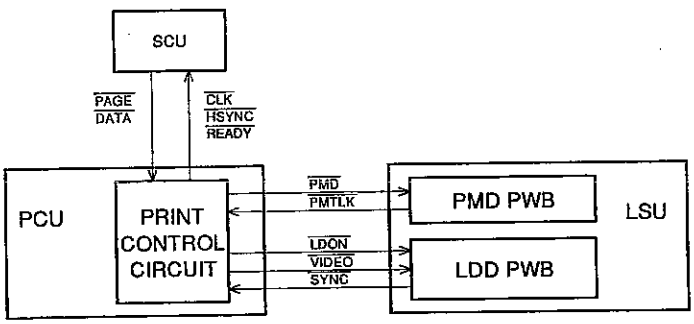
(3) After the PCU initialize the circuit, it drives $\overline{\text{CRDY}}$ to LOW.

(4) The PCU drives $\overline{\text{READY}}$ to LOW when the printing sequence ready state is obtained.

Note: 1. The PCU can receive $\overline{\text{PRIM}}$ signal only when $\overline{\text{CRDY}}$ signal is at LOW.

2. When $\overline{\text{PRIM}}$ signal is received during printing, circuit initialization is performed after completion of print cycle.

3. Print control peripheral circuit



- When the printer is ready for printing, the PCU supplies $\overline{\text{READY}}$ signal to the MCU.
- When the printer is ready ($\overline{\text{READY}}$ is at LOW), the print cycle is started by $\overline{\text{PAGE}}$ signal from the MCU.
- When the unit enters the print cycle, $\overline{\text{PMD}}$ signal is sent to the PMD (Polygon Motor Drive) PWB and $\overline{\text{PMTLK}}$ is outputted. The polygon motor reaches at a constant speed and the laser is lighted by $\overline{\text{LDON}}$ and $\overline{\text{VIDEO}}$.
- The PCU sends $\overline{\text{HSYNC}}$ (which is made of $\overline{\text{SYNC}}$ from LDD PWB) and $\overline{\text{CLK}}$ (which is made in the print control circuit) to the MCU.
- The MCU sends $\overline{\text{DATA}}$ through synchronizing $\overline{\text{HSYNC}}$ and $\overline{\text{CLK}}$.
- $\overline{\text{VIDEO}}$ is driven by $\overline{\text{DATA}}$ to turn on and off the laser.

3-1. LSU control signals

(1) $\overline{\text{LDON}}$

A low on this line causes the optical control circuit to activate.

(2) $\overline{\text{VIDEO}}$

A low on this line causes the laser diode to emit a beam.

(3) $\overline{\text{SYNC}}$

A Laser beam is detected at a high to low transition of this signal.

(4) $\overline{\text{PMD}}$ (polygonal motor drive)

The polygonal motor starts with a low state of this signal and stops with a high state of the signal.

(5) $\overline{\text{PMTLK}}$ (polygonal motor lock)

PLL sync complete signal.

Low: Sync rotation

High: Async rotation

It requires 6 seconds, max., before $\overline{\text{PMTLK}}$ becomes low after $\overline{\text{PMD}}$ is set low.

3-1-1. Laser diode drive PWB (LDD PWB)

Laser diode drive circuit block diagram

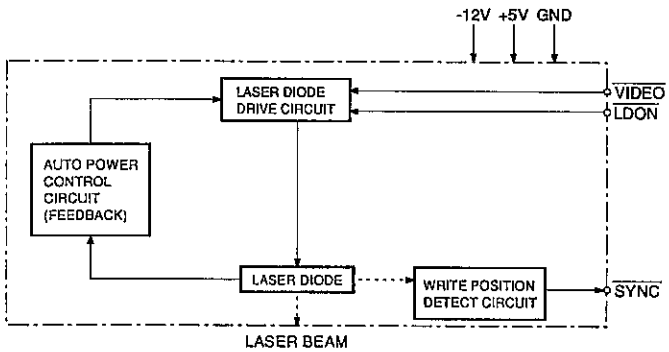


Fig. 15

The LDD PWB has the following functions:

(1) Beam emit power of the laser diode is maintained at the given level constant at all times.

(2) $\overline{\text{SYNC}}$ is issued.

The signal $\overline{\text{SYNC}}$ is issued when laser beam is detected, to determine the write start position.

(3) Laser diode beam emit is controlled on and off with the $\overline{\text{VIDEO}}$ signal.

3-1-2. Polygonal motor drive PWB (PMD PWB)

When the motor speed reaches the rated 6200.787 revolutions perminute the signal; $\overline{\text{PMTLK}}$ is issued. On and off of the motor is controlled with $\overline{\text{PMD}}$.

Polygonal motor drive circuit block diagram

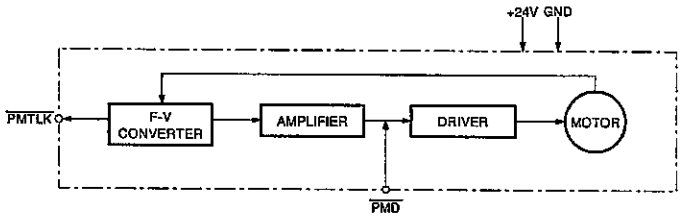
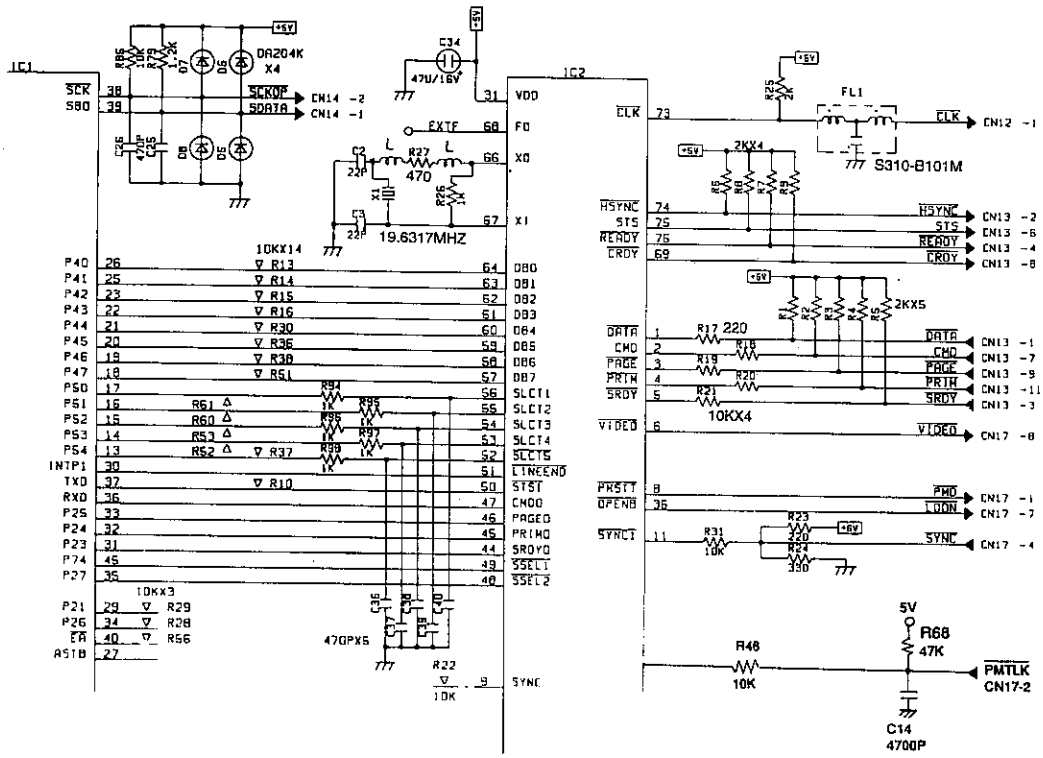
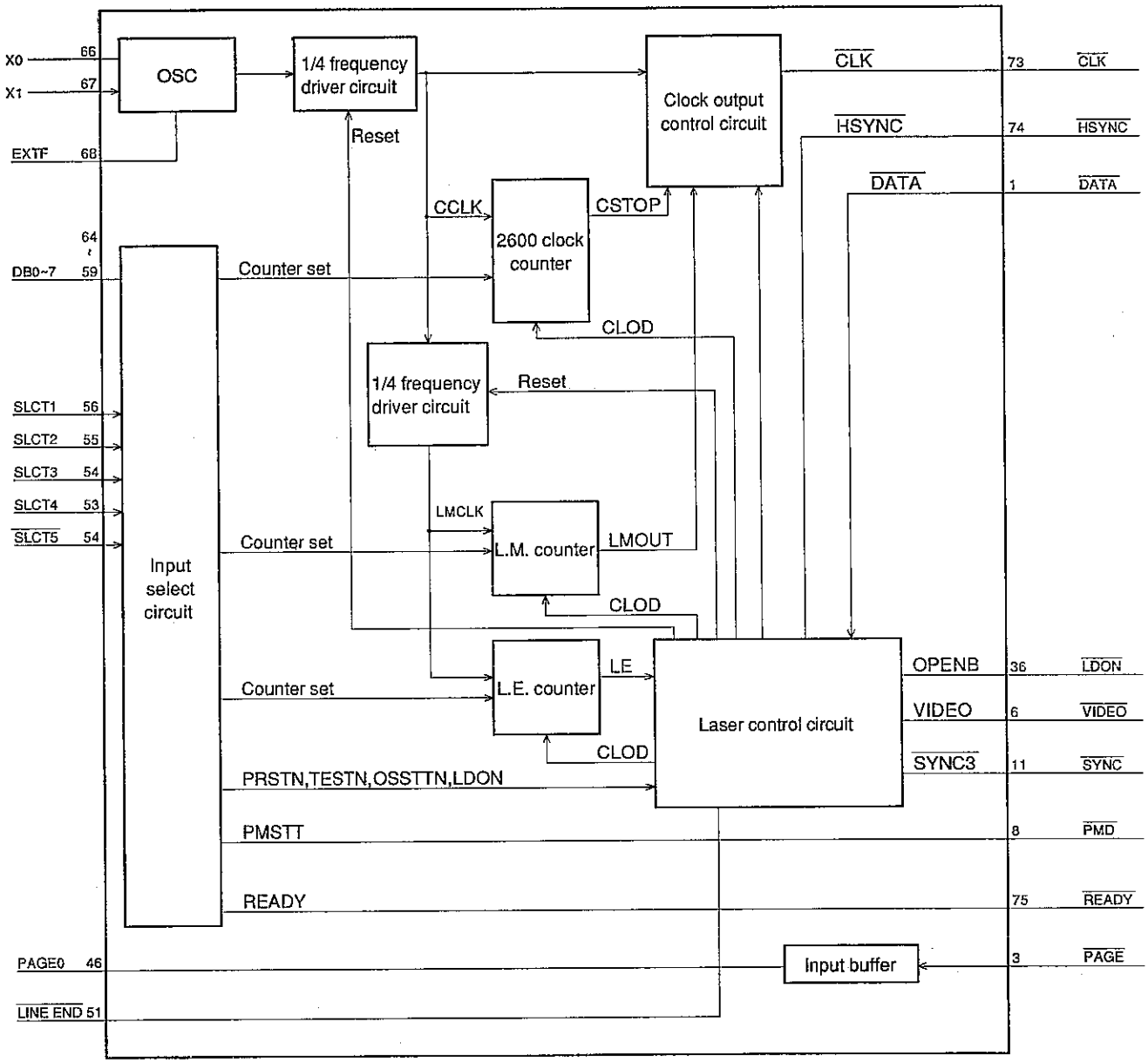


Fig. 16

3-2. Print control circuit



3-2-1. Gate array (LZ93M18)



Meaning of signals

XO, XI: XTAL connection terminal for the OSC circuit.

EXTF: CPU clock output signal.

DB0 ~ 7: Counter data, control signal. (See the table.)

SLCT1 – 4: Counter select signal, multiplexer input circuit select signal.

$\overline{\text{SLCT5}}$: DB0 ~ 7 and SLCT1 – 4 select signal.

PAGEO: PAGE signal output for the CPU.

$\overline{\text{LINEEND}}$: Signal for line end interruption for the CPU.

$\overline{\text{CLK}}$: Clock output signal for the MCU.

$\overline{\text{HSYNC}}$: HSYNC output signal for the MCU.

$\overline{\text{DATA}}$: Data signal from the MCU, print data.

$\overline{\text{LDON}}$: Laser ON APC start signal to the LDD PWB.

$\overline{\text{VIDEO}}$: Laser ON/OFF signal to the LDD PWB. ON/OFF is controlled with print data.

$\overline{\text{PMD}}$: Polygon motor drive signal.

$\overline{\text{READY}}$: Printer ready signal to the MCU.

$\overline{\text{PAGE}}$: Print start signal from the MCU.

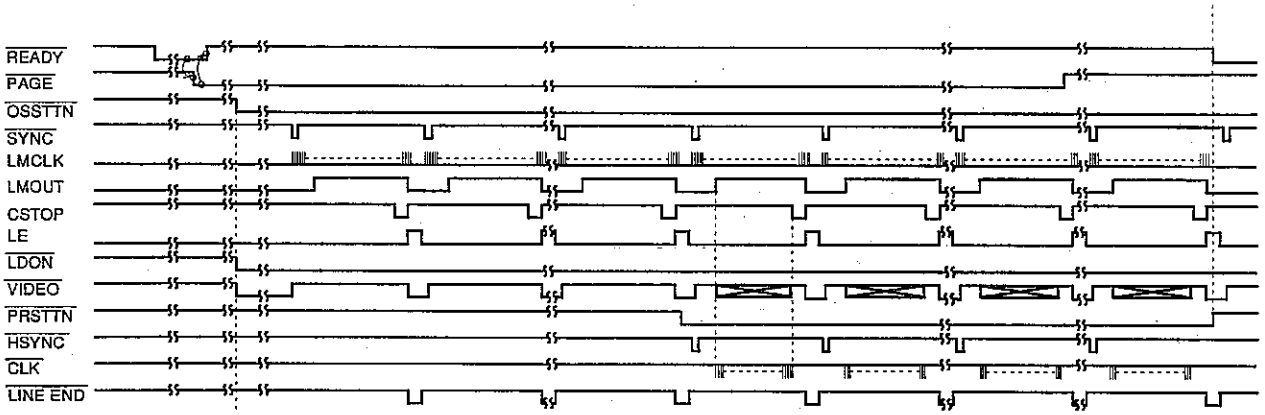
DB0 – 7

	When $\overline{\text{SLCT5}}$ is LOW:
DB0	$\overline{\text{PRSTTN}}$: Print start signal. Controls HSYNC and CLK to determine the top margin.
DB1	$\overline{\text{TESTN}}$: Laser test ON signal. Turns on the laser only in the print area.
DB2	$\overline{\text{OSSTTN}}$: G/A print control circuit drive signal.
DB3	$\overline{\text{LDON}}$: Laser ON signal. Compulsorily turns on the laser.
DB4	$\overline{\text{READY}}$: READY signal for the MCU.
DB5	$\overline{\text{CRDY}}$: CRDY signal for the MCU.
DB6	$\overline{\text{PMSTT}}$: PMD (Polygon Motor Drive) signal.
DB7	— —

When $\overline{SLCT5}$ is HIGH, SLCT1 ~ SLCT4 is 8 bit data for each counter setting.

SLCT1 is HIGH	Lower 1 byte of 2600 counter
SLCT2 is HIGH	Upper 1 byte of 2600 counter
SLCT3 is HIGH	1 byte of L.E. counter
SLCT4 is HIGH	1 byte of L.M. counter

Timing of the print control circuit



(1) When the printer engine enters the ready state, the PCU drives $\overline{READY}$ to LOW. When $\overline{READY}$ becomes LOW, if the MCU has completed print data processing, $\overline{PAGE}$ is driven to LOW and printing is started.

(2) When $\overline{PAGE}$ becomes LOW, the PCU enters the print cycle to drive $\overline{READY}$ to HIGH and $\overline{OSSTTN}$ to LOW, driving the G/A print control circuit.

(3) When $\overline{OSSTTN}$ becomes LOW, $\overline{LDON}$ also becomes LOW to turn on the laser drive circuit. Then $\overline{VIDEO}$ is supplied until the first $\overline{SYNC}$ is received, and the laser is lighted.

(4) Synchronization is performed at the falling edge of $\overline{SYNC}$ and all the counters start.

(5) The CPU is interrupted at the falling edge of $\overline{LINEEND}$ to perform line end interruption process.

a) Line number is counted to determine the top margin.

b) Timing to drive $\overline{PRSTTN}$ to LOW is made. By setting $\overline{PRSTTN}$ with line end interruption, $\overline{CLK}$ and $\overline{HSYNC}$ are supplied normally.

(6) The clock frequency divided into 1/4 by the L.M. counter is counted to determine the left margin.

(7) The 2600 counter counts 2600 clocks and sends $\overline{CLK}$ corresponding to 2600 dots to the MCU.

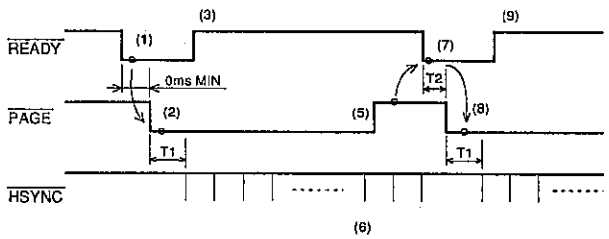
(8) The L.E. counter generates count load timing for the L.M. counter and the 2600 counter, output timing of $\overline{LINEEND}$ signal, and the laser ON timing to obtain $\overline{SYNC}$.

(9) Timing of $\overline{CLK}$ output to the MCU is formed by $\overline{PRSTTN}$, the L.M. counter, and the 2600 counter.

3-2-2. MCU-PCU interface

Data transfer between the MCU and the PCU takes place via the video interface. The MCU sends DATA to the PCU in sync with CLK received from the PCU.

Printing Operation sequence



(1) PCU is ready for printing.

(2) Start request from MCU to PCU.

(3) PCU, on receiving $\overline{PAGE}$, makes the mechanism start and turns $\overline{READY}$ to H (busy state).

(4) PCU turns on the polygon motor and, after completing the preparatory process, starts to send $\overline{HSYNC}$ pulses.
(The time of T1 for the first printing is changed depending on the processing condition)

(5) MCU, after sending one page of data, turns $\overline{PAGE}$ to H. $\overline{PAGE}$ signal should remain low during the complete page printing time, PCU generates maximum 10 $\overline{HSYNC}$ pulses past $\overline{PAGE}$ goes high. The maximum number of $\overline{HSYNC}$ pulses is 6000 lines if $\overline{PAGE}$ has been low. Then PCU waits until $\overline{PAGE}$ goes high.

(6) On completion of last line printing, printed copy is sent out.

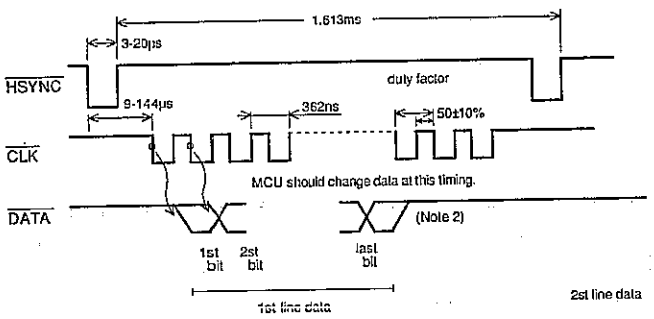
(7) Same as (1).

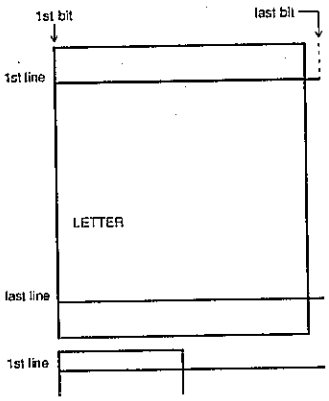
(8) Start request from MCU to PCU.
In order to run the printer at it's maximum speed, the time T2 should be set within 0.5s. Otherwise the print speed will decrease.

(9) Same as (3).

NOTE: The duration of the unstable $\overline{PAGE}$ pulse, which occurs when the controller power turns ON/OFF, should be 50ms at maximum.
In case the such duration is more than 50ms, PCU might recognize $\overline{PAGE}$ is effective.

VIDEO DATA TRANSMISSION TIMING CHART





Note:
1. The number of CLK pulses is 2600 dots in each line.
2. $\overline{\text{DATA}}$ tobe H level (white) after sending the last bit of line data.
3. Left edge of the paper is set as base line.
4. The head CLK pulse in each line begins at the left of paper edge.

4. Print process control circuit

The printer state is detected by the input circuit to control each block, performing printing operation.

(1) Engine status input circuit

(2) Heater lamp control circuit

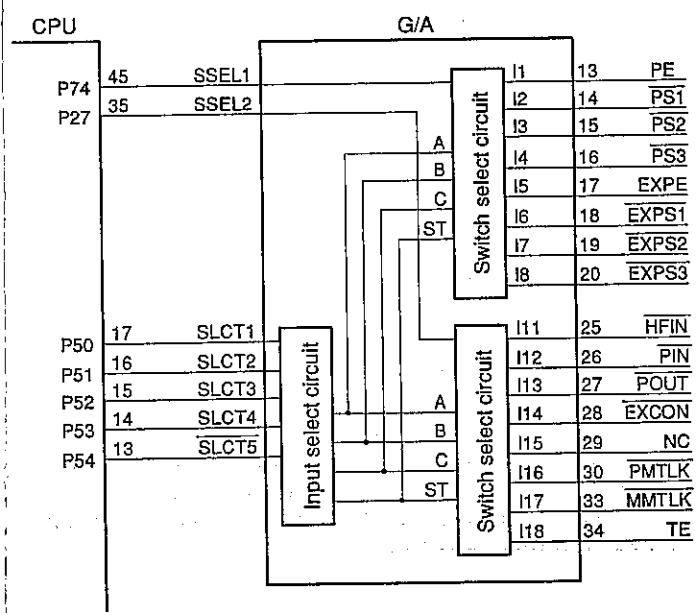
(3) High voltage unit, main motor, fan motor, solenoid drive circuit

(4) Second cassette feeder unit (option) control circuit

4-1. Engine status input circuit

Signals of +24V (cover open) detection, WTB, DVF, and PCF are directly sent to the CPU. The other signals are selected by G/A LZ93M18 and sent to the CPU as signals of SSEL1 or SSEL2.

4-1-1. Gate array (LZ93M18) status input circuit



Switch select circuits 1 and 2 are equivalent to HC151. Through selection of A, B, and C, I1~I8 (I11~I18) of the input circuit are changed over, and supplied as SSEL1 (SSEL2) when ST is at LOW level.

Select signal correspondence is: A=SLCT1, B=SLCT2, C=SLCT3. When $\overline{\text{SLCT5}}$ is low, $\overline{\text{ST}}$ is low to supply data.

$\overline{\text{SLCT5}}$	SLCT1	SLCT2	SLCT3	SSEL1	SSEL2
0	0	0	0	PE	$\overline{\text{HFIN}}$
	1	0	0	$\overline{\text{PS1}}$	$\overline{\text{PIN}}$
	0	1	0	$\overline{\text{PS2}}$	$\overline{\text{POUT}}$
	1	1	0	$\overline{\text{PS3}}$	$\overline{\text{EXCON}}$
	0	0	1	EXPE	—
	1	0	1	$\overline{\text{EXPS1}}$	$\overline{\text{PMTLK}}$
	0	1	1	$\overline{\text{EXPS2}}$	$\overline{\text{MMTLK}}$
	1	1	1	$\overline{\text{EXPS3}}$	TE
1	X	X	X	L	L

PE: High when no paper in the cassette. Sensor output.

PS1~3: Paper size detect sensor output. When each switch is turned on, the corresponding paper size is detected.

EXPE: Optional second cassette/feeder paper detection sensor output. High when no paper in the cassette.

EXPS1~3: Optional second cassette/feeder paper size detection sensor output. Same operation as PS1~3.

$\overline{\text{HFIN}}$: Manual input switch. Low when there is paper in the manual input section.

$\overline{\text{PIN}}$: Paper-in detection switch. Low when paper is detected in the machine (in front of PS roller.)

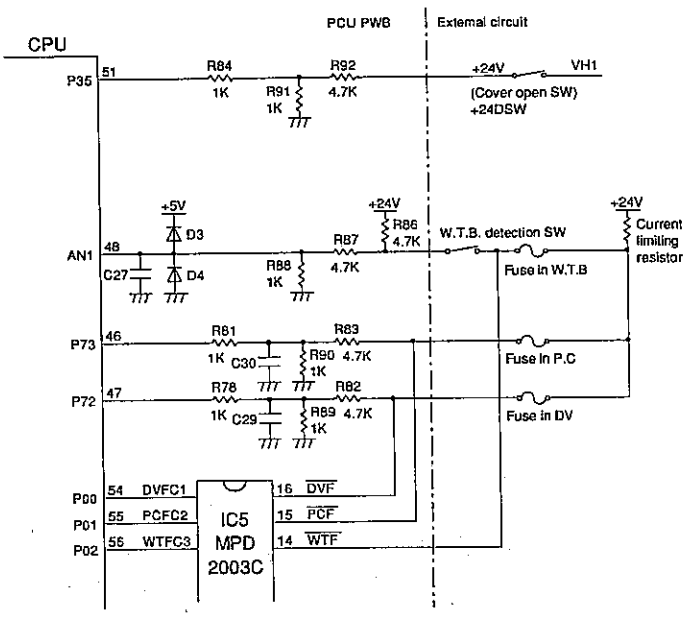
$\overline{\text{POUT}}$: Paper-out detection switch. Low when paper is detected in the machine (in the paper-out section.)

$\overline{\text{EXCON}}$: Second cassette feeder connection detection signal. Low when optional second cassette feeder is connected.

$\overline{\text{PMTLK}}$: Polygon motor lock signal. Low when it is detected that the polygon motor reaches a constant speed. (Output from the PLL circuit)

$\overline{\text{MMTLK}}$: Main motor lock signal. Low when it is detected that the main motor reaches a constant speed. (Output from the PLL circuit)

TE: Toner empty signal. Low when there is toner. High or turning to LOW at every 2 seconds, there is no toner or no DV unit.



4-1-2. Cover open detection

When the cover is opened, the safety switch (+24V DSW, cover open SW) is turned off to stop supplying +24V. Then port 35 of the CPU is driven to low level, detecting cover open.

4-1-3. Waste toner box (W.T.B.) detection

① W.T.B. detection
When W.T.B. is installed, W.T.B. switch is turned on. When $\overline{WTF}$ is driven to low then AN1 voltage becomes about 0V.
When there is no W.T.B. installed, W.T.B. switch is off and $\overline{WTF}$ is low. Voltage at AN1 is about 2.3V because +24V is divided by R86, R87, and R88.

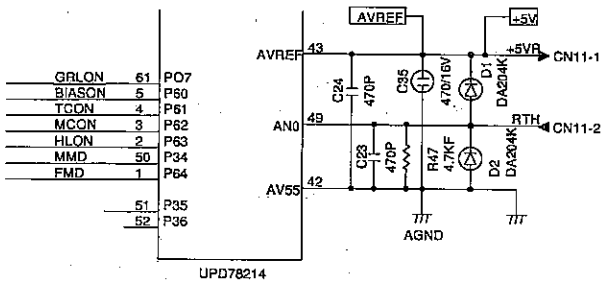
② W.T.B. new/old detection
When W.T.B. is new, voltage at AN1 is about 4V (by dividing with R87 and R88). Because the fuse in new W.T.B. is not blown.
For old W.T.B., fuse is blown, and voltage at AN1 is about 2.3V because 24V is divided by R86, R87, and R88.
By combination of ① and ②, presence of waste toner box and its new/old are detected.
When a new waste toner box is installed, WTF is driven to low in about 1 sec, blowing the fuse.

4-1-4. PC, DV old/new detection

When a new unit is installed, port 72 and port 73 are driven to high. The fuse in each unit is not blown. Because DVF or PCF is driven to low for about 1 sec to blow blow the fuse.
Since the fuse in an old unit is blown, port 72 or port 73 becomes low. Thus judgement is made.
When each unit life is over, if a new unit is installed, the life counter is automatically cleared.
Even when life is not over, if a new unit is installed, the life counter is cleared and the fuse is blown.

4-2. Heater lamp control circuit

Voltage divided by the thermistor attached to the fuser roller surface, R74, (4.7kF) is applied to AN0 port to detect the fuser roller surface temperature and turn on/off HLON signal, controlling the heater lamp. Heater temperature control, high temperature error, low temperature error, thermistor open, thermistor short are all performed by the CPU.



4-3. High voltage unit (HVU)

Consists of the MC circuit, TC circuit, bias circuit, and grid circuit; each one having the following assignment.

MC circuit: High voltage is added to the main corona unit to charge the drum surface.

TC circuit: High voltage is added to the transfer corona unit to transfer the toner on the drum surface to the copy paper.

Bias circuit: Charges carrier within the developer cartridge.

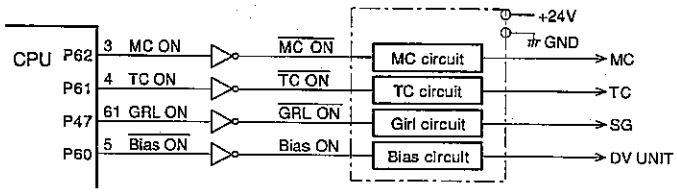
Grid circuit: Used to stabilize the potential on the drum surface by controlling the scorotron charge device.

A screen grid is provided between the main corona wire and the photoconductor, and the constant voltage is added to the grid to distribute the corona current to the photoconductor and the grid. As the surface potential of the photoconductor increases by corona charge, the current flowing through the grid increases. As the photoconductor potential reaches the grid potential, the entire current flows to the grid so that the photoconductor potential is maintained at the given level at all times.

(Interface with PCU)

Control signal	
$\overline{MHVON}$	Output is active when the control signal is below 2V.
$\overline{THVON}$	Output is not active when the control signal is open.
BIASON	Output is active when the control signal is open.
	Output is not active when the control signal is below 2V.
$\overline{GRLON}$	Output is high when the control signal is open.
	Output is low when the control signal is below 2V.

- The DV bias voltage is generated by dividing a voltage generated at the screen grid by the main corona. Therefore, when the main corona is not turned on (when there is no voltage at the screen grid), the DV bias is not generated.

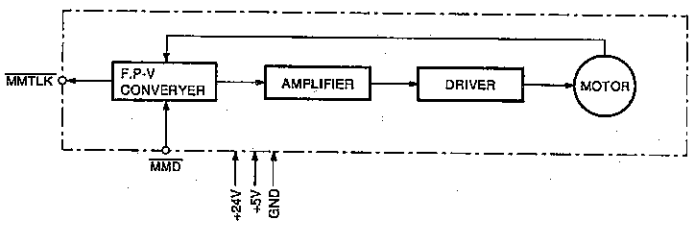


4-4. Main motor controller

Used to control start and stop of the main motor with $\overline{MMD}$ from the PCU and to maintain the motor revolutions as determined.

MAIN MOTOR CONTROL CIRCUIT

BLOCK DIAGRAM



$\overline{MMD}$: The motor starts to run when $\overline{MMD}$ is set low.

$\overline{MMTLK}$: When the motor revolutions go out of the speed setting (±5%), the output signal is set high to inform of an abnormal condition.

4-5. Second cassette feeder (option) control circuit

This circuit performs on/off control of the paper feed motor and paper feed solenoid in the second cassette feeder (option), and input for the paper empty detection switch and the paper size detection switch.

The connector is Pin D sub attached to the rear of the DC power PWB.

$\overline{EXPFS}$: Second cassette feeder paper feed solenoid ON signal. Low when ON.

$\overline{PFMD}$: Second cassette feeder motor ON signal

When the second cassette feeder is selected, if print start $\overline{PAGE}$ signal is supplied, $\overline{PFMD}$ is driven to low to rotate the second cassette feeder motor. The $\overline{EXPFS}$ is turned on for 0.5sec to rotate the pick up roller, feeding paper.

5. Print sequence control

Print Sequence Control

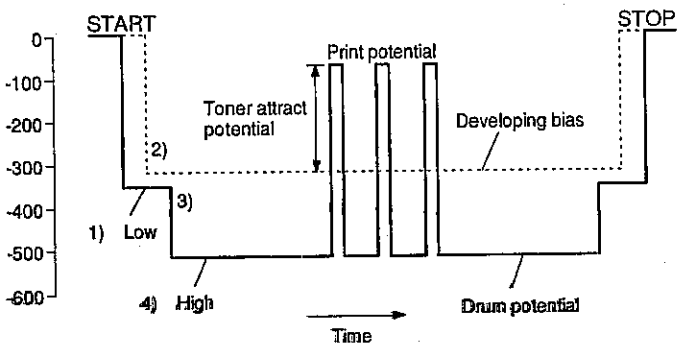
The CPU (PCU) controls the MCU and the printer engine sequence with signals from the MCU and the printer engine.

The laser printer process control is composed of the charging process control for forming latent image on the OPC drum, the developing process control for developing based on the latent image, and the transfer process control for transfer of the developed, visible image from the OPC drum surface to paper.

The basic process control is shown in the following:

Voltage added to the screen grid can be selected, high and low.

To make it easily understood, the figure below shows voltage transition at the developer unit.



Start

1) Because the grid potential is at a low level, the drum potential is at low level. (Carrier may not be attracted though the carrier is pulled towards the drum by the electrostatic force.)
2) Developing bias is added when the drum potential is at a low level.
3) Even if the developing bias voltage is added, toner deposit will not occur because the bias voltage is higher than the drum potential.
4) After the developing bias is added, the grid voltage changed from low to high, but the toner and developer may not be attracted because the drum potential is at high level.

Stop

1) After completion of printing, more than one turn of the OPC drum is uniformly charged at high level.
2) Only the portion uniformly charged at high level is adversely charged to low level by the transfer corona.
3) When the portion discharged by the transfer corona passes the main corona section, the grid voltage is changed over to LOW output.
4) When the LOW grid voltage output area on the OPC drum passes the developer section, the developing bias is turned off.
5) The OPC drum is optically discharged more than one turn by the semiconductor laser and is stopped.

Retaining developing bias at an abnormal occurrence

Function

The developing bias will be lost if the power supply was shut off during printing due to a power supply failure. In this event, the drum potential slightly abates and the carrier makes deposits on the drum because of strong static power. To prevent this, the machine incorporates the function to retain the developing bias for a certain period against a possible power supply failure.

Basic function

Normally, the developing bias voltage is retained for a certain time before the drum comes to a complete stop, if the machine should stop before completing the normal print cycle. In this way, the developing bias can be added before resuming the operation after an abnormal interruption. No carrier will therefore make a deposit on the drum surface.

5-1. Forward revolution timing

Before starting image formation process, forward revolution cycle is performed to initialize the OPC drum state. The process control differs depending on the previous process completion conditions: normal completion or abnormal completion.

Abnormal completion means the following two cases:

(1) When Any error other than toner empty, life over, and paper empty occurs during main motor is turned ON.

(2) When the power is turned off during the main motor ON.

The forward revolution cycle is performed in the following three cases:

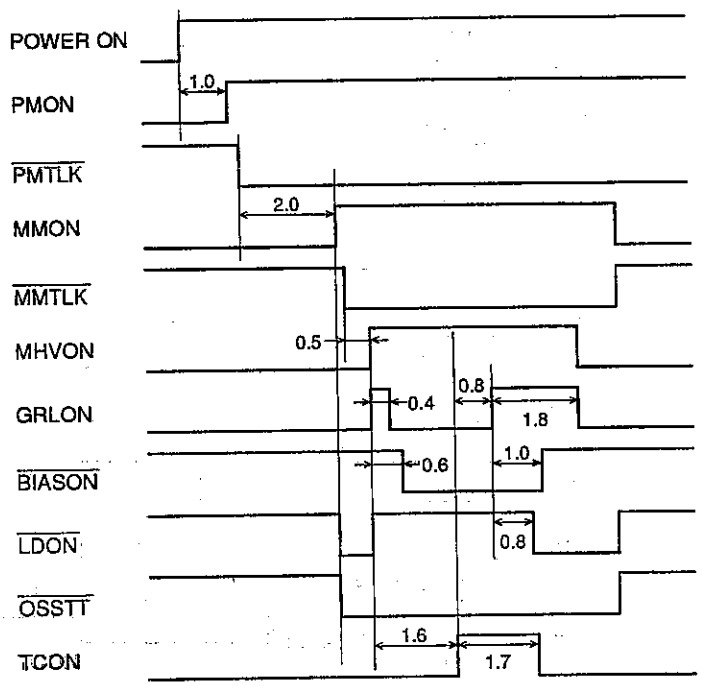
(1) When the power is turned on. (Except in the diagnostic mode.)

(2) When resetting from an error state. ("A4" (error reset) command from the controller)

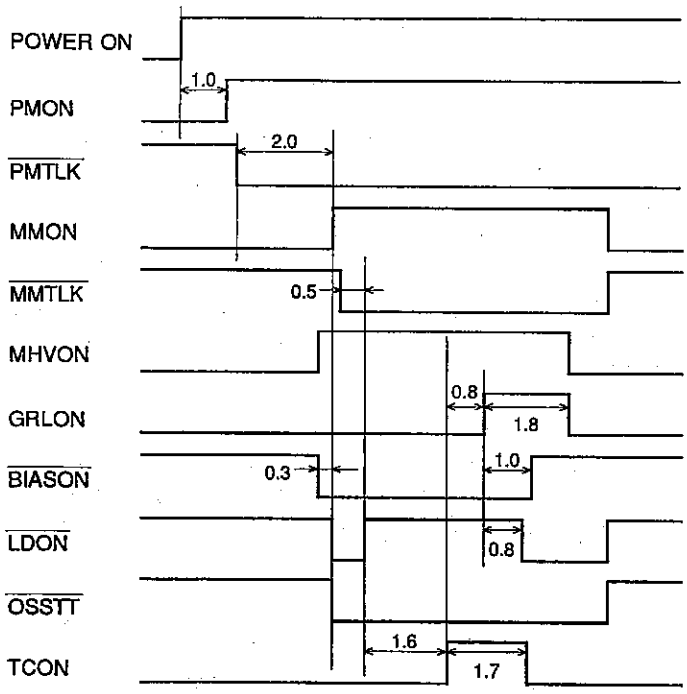
(3) When restarting after an interval of more than 3 minutes.

The timing chart of normal completion and abnormal completion is shown below:

5-1-1. After normal termination



5-1-2. After abnormal termination



5-2. Print cycle timing

When the PAGE signal is issued from the MCU with the print engine in the ready state, the print engine goes into the print cycle.

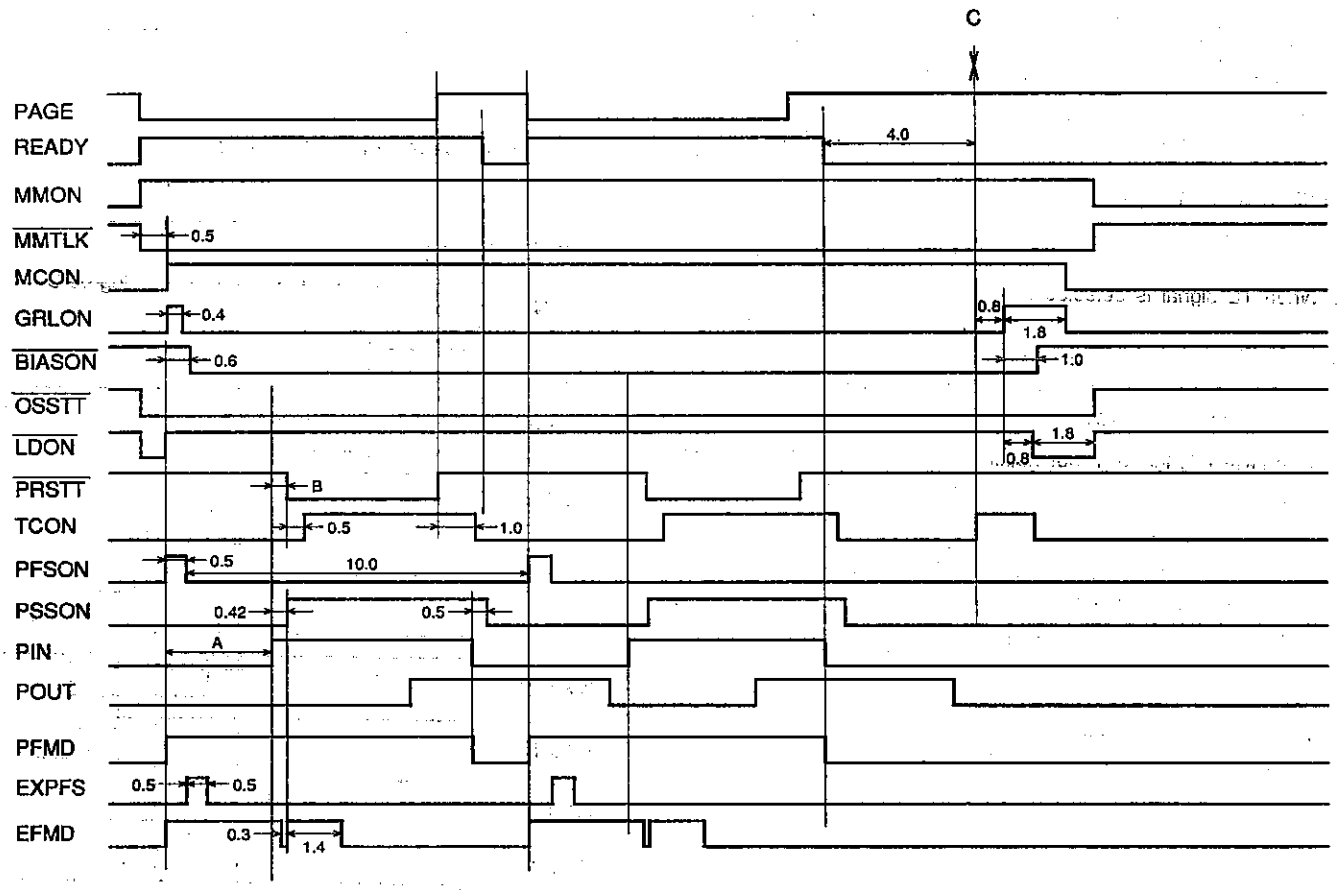
The print ready state is established when the following conditions are met.

(1) The outset cycle must have been completed.

(2) Warmup must be have been completed. Warmup will be complete at the moment the heater roller temperature reached 165°C (175°C Manual feed) after the start of the outset cycle.

(3) No error was met.

5-2-1. Print cycle timing chart (Printing two A4 papers)



A: Time varies according to cassettes.
B: Top margin value (ø: 103 line, 50: 253 line, 99: 400 line)
C: Print end cycle start point

5-3. Print cycle completion timing when an error occurs

When one of the following errors occurs during print cycle, the signals other than $\overline{\text{BIASON}}$ and $\overline{\text{MHVON}}$ are immediately turned off. (Fig. 52)

Error code: P1 – P4, d0, C1 – C6

In this case, immediately after MHVON signal is turned off, the OPC drum potential is at HIGH. When $\overline{\text{BIASON}}$ and MHVON signals are turned off simultaneously, the OPC drum revolution causes carrier drop. To prevent this, $\overline{\text{BIASON}}$ signal and MHVON signal are retained by the CPU until the OPC drum revolution completely stops (for 0.2 sec after $\overline{\text{MMD}}$ is turned to HIGH.)

When the power is turned off during print cycle, carrier drop failure occurs for the same reason as above. In this case, $\overline{\text{BIASON}}$ and MHVON cannot be retained by the CPU. Therefore, developing bias voltage is retained.

In the case of paper out error, normal completion cycle is performed immediately after occurrence of the error.

5-4. Error detect specification

The error judgement criteria for the printer engine (except the MCU) are shown below:

(1) Paper jam

1. When Pin Sw does not turns on within 2.3 sec after the standard PFS is turned on.
2. When Pin SW does not turns on within 3.3 sec after the option (second cassette) PFS is turned on.
3. When Pin SW does not turns off within 8 sec after the PSS is turned on.
4. When Pout SW does not turns on in 4 sec after the PSS is turned on.
5. When Pout SW does not turns on in 4 sec after Pin SW is turned off.
6. When Pout SW is on in other than print cycle.
7. When Pin SW is on and HFSW is off in other than print cycle

(2) Paper empty

There is no paper in the selected cassette.

(3) Toner empty

1. When TE signal is detected for 10 sec continuously during the main motor revolution.

(4) Cover open

When the +24V SW is off.

(5) Waste toner box change

1. When waste toner box is not installed.
2. The waste toner box fuse is not blown in 1 sec.
3. When new waste toner box is not installed on resetting from the toner empty.

(6) OPC life over (Drum cartridge)

1. When the life counter shows zero.
2. When the life counter shows below zero when the power is turned on.
3. When the life counter exceeds –5000.
4. When the cartridge fuse is not blown in 1 sec.

(7) DV life over

1. When the life counter shows zero.
2. When the life counter shows below zero when the power is turned on.
3. When the life counter exceeds -3000.
4. When the cartridge fuse is not blown in 1 sec.

(8) Printer life over

1. When the life counter shows zero.
2. When the life counter shows below zero when the power is turned on.

(9) P1 (PCU ROM error)

When the PCU ROM check error occurs after turning on the power.

(10) P2 (PCU RAM error)

When the PCU RAM read/write check error occurs after turning on the power.

(11) P3 (NVRAM error)

When the NVRAM sum check error occurs after turning on the power.

(12) P4 (Serial communication error)

When the overrun error or the framing error occurs when the PCU is receiving CMD from the MCU.

(13) C1 error (Optical system error)

1. When SYNC is not detected within 0.5–1.0 sec after issuing the optical system print start signal (OSSTT).
2. When SYNC is not detected by checking at every 0.5 sec after the timing of the above.

(14) C2 error (Main motor error)

1. When MMTLK signal is not at LOW after 1.0–1.5 sec after MMON signal is turned on.
2. When five continuous MMTLK signals are detected by sampling at every 0.5 sec after the timing of the above.

(15) C3 error (Polygon motor error)

1. When PMTLK signal is not at LOW after 6.0–6.5 sec after PMON signal is driven to HIGH.
2. When five continuous PMTLK signals are detected by sampling at every 0.5 sec after the timing of the above.

(16) C4 error (Heater high error)

1. When the thermistor temperature exceeds 240 degree C.

(17) C5 error (Heater low error)

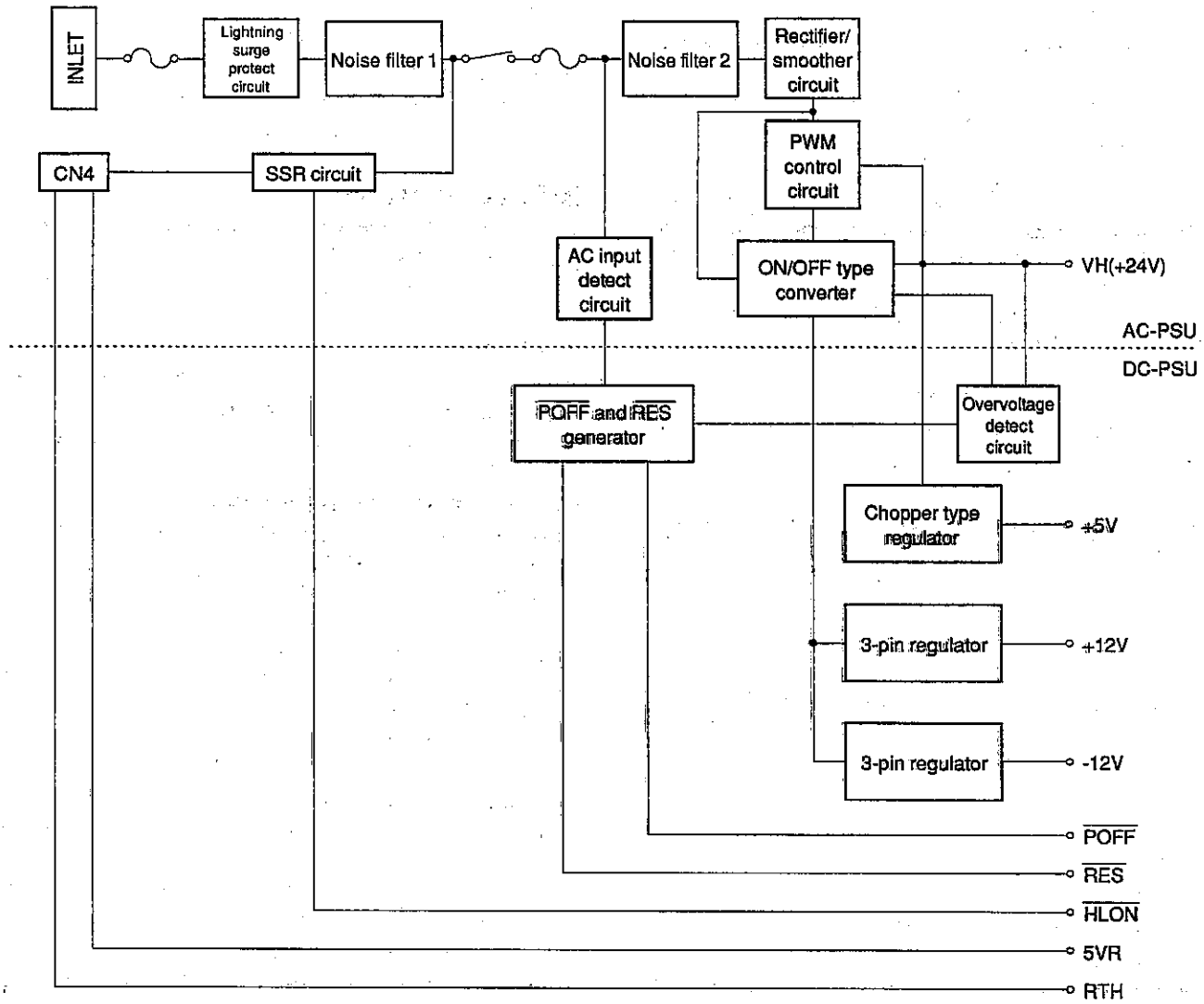
1. When the thermistor temperature falls under 100 degree C in modes other than the warm up mode.

(18) C6 error (Thermistor open)

1. When RTH=0 is detected.

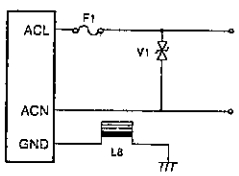
[6] Power supply circuit description

6-1. Circuit block diagram



6-2. Operational theory

1. Surge protect circuit



(Fig.1 Lightning surge protect circuit)

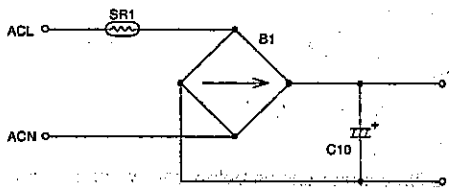
This circuit is provided to protect the power supply and the secondary circuit from damage by surges that could be caused between the lines or line and ground.

2. Noise filter circuit

(Fig.2 Noise filter circuit)

The noise filter is employed to prevent noise leakage from the power supply unit, as well as to prevent noise intrusion from an external source.

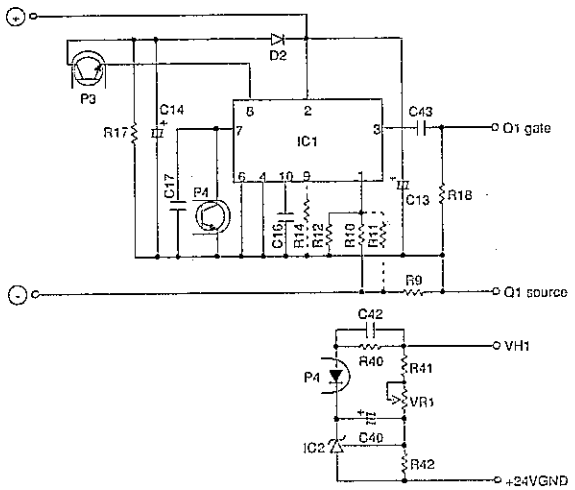
3. Rectifier/smoother circuit



(Fig.3 Rectifier/smoother circuit)

In this circuitry, AC input is rectified through the diode bridge and smoothed by the capacitor to provide 310 VDC from 220VAC supply. Thyristor SR1 is employed to protect against surge current. It has a large resistance at power on. As its temperature rises, however, its resistance decreases, reducing energy loss.

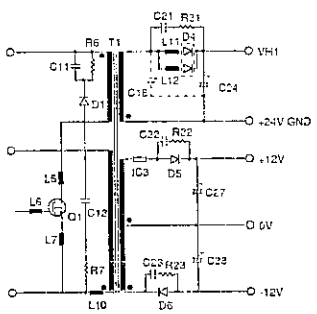
4. PWM control circuit



(Fig.4 PWM control circuit)

The VH1 (+24V) output is provided by the PWM control circuit with IC1.
The VH1 output level is monitored by IC2 whose control output issued by P4 is transferred to IC1 to reduce the output signal width of the 3-pin output by IC1 when the voltage rises and expands the width when the voltage drops.
The capacitor C16 is employed to determine the oscillation frequency which is set to 100KHz for this power supply unit.
The resistor R16 is used to control the maximum on time; the on time becomes shortened when the resistance is decreased. Resistors R9 and R10 are used to monitor the current flowing through the drain and the source which acts to reduce the on pulse width when an overload occurs.
P3 is employed to protect from overvoltage which is used to shut off the IC1 output when overvoltage occurred.

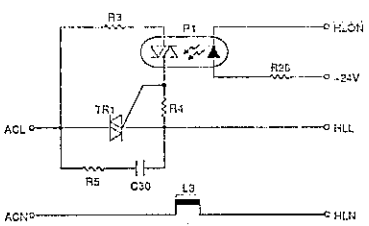
5. ON/off type converter



(Fig.5 On/off type converter circuit diagram)

For this power supply unit, an on-off type converter (ringing choke converter) is used for main AC/DC conversion circuit.
While Q1 is active, the energy is accumulated in T1 whose energy is released to the secondary side when Q1 is off. By controlling the T1 on time, the energy stored in T1 is adjusted to hold the secondary side output voltage to the given level.

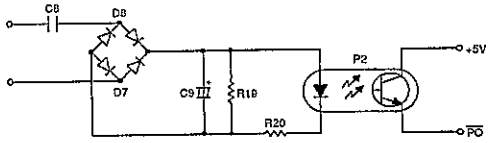
6. SSR circuit



(Fig.6 SSR circuit)

This circuit is adopted for the halogen lamp control. With a low state of $\overline{\text{HLON}}$ signal, the HLL output is issued.
P1 is a zero-cross type.

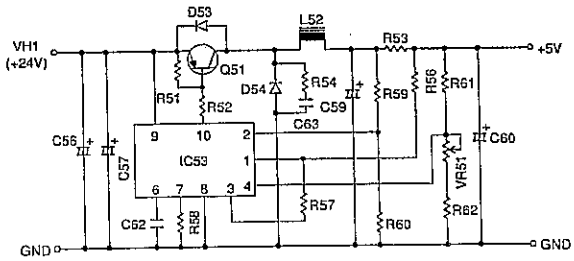
7. AC input detect circuit



(Fig.7 AC input detect circuit)

This circuit is used to inform presence of AC input to the secondary circuit using P2, which is used to generate $\overline{\text{POFF}}$ and $\overline{\text{RES}}$ signals.

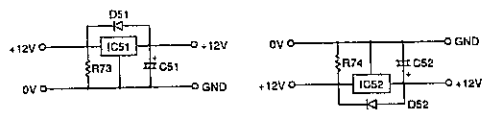
8. Chopper type regulator



(Fig.8 Chopper type regulator circuit)

A PWM controlled chopper type regulator is employed to generate +5V from +24V.
The circuit is controlled by IC53. The on pulse width of Q51 is adjusted according to a +5V load so as to provide stable +5V output voltage.
C62 and R58 form the CR network used to determine the oscillation frequency. It is set to approximately 35KHz for this power supply unit.

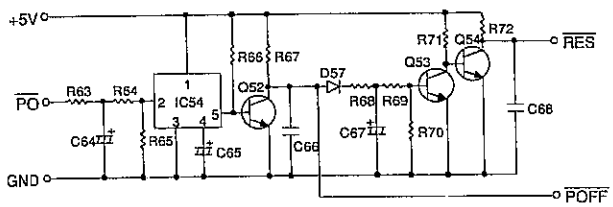
9. 3-pin regulator



(Fig.9 3-pin regulator circuit diagram)

The ±12V output from the AC/DC PWB is not stable, being affected by a load fluctuation of +24V output and ±12V output. (+12V; +14V–+20V, –12V; –14V—20V)
The output is dropped by IC51 and IC52 to obtain the stable outputs.
D51 and D52 are for protection of the 3-pin regulator.

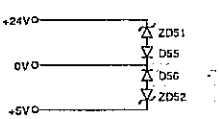
10. $\overline{\text{POFF}}$ and $\overline{\text{RES}}$ signal generation circuit



(Fig.10 $\overline{\text{POFF}}$ and $\overline{\text{RES}}$ signal generator circuit)

When the AC input is detected by the AC input detect circuit, P2 is turned on to charge C64. As this voltage is monitored by IC54, the $\overline{\text{POFF}}$ signal is set high. The time from AC input detection to $\overline{\text{POFF}}$ rising is determined by C65.
With a high state of $\overline{\text{POFF}}$, C67 is charged via R68 and $\overline{\text{RES}}$ goes high after a delay of a time the capacitor is charged.
When AC supply is cut off, $\overline{\text{POFF}}$ goes low as the potential in C64 decreases and $\overline{\text{RES}}$ is set low after a delay of a time C67 is discharged.

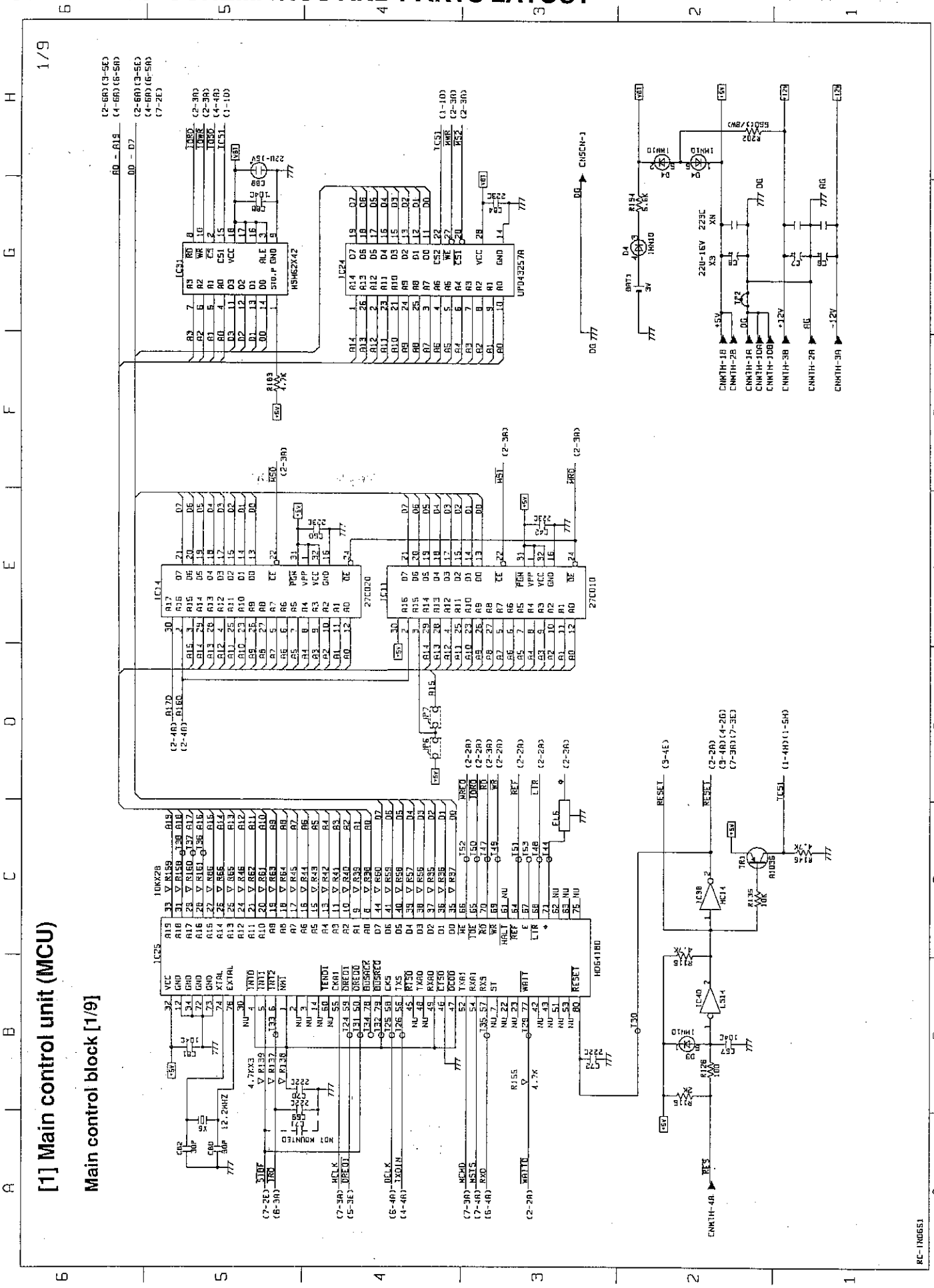
11. Overvoltage detect circuit



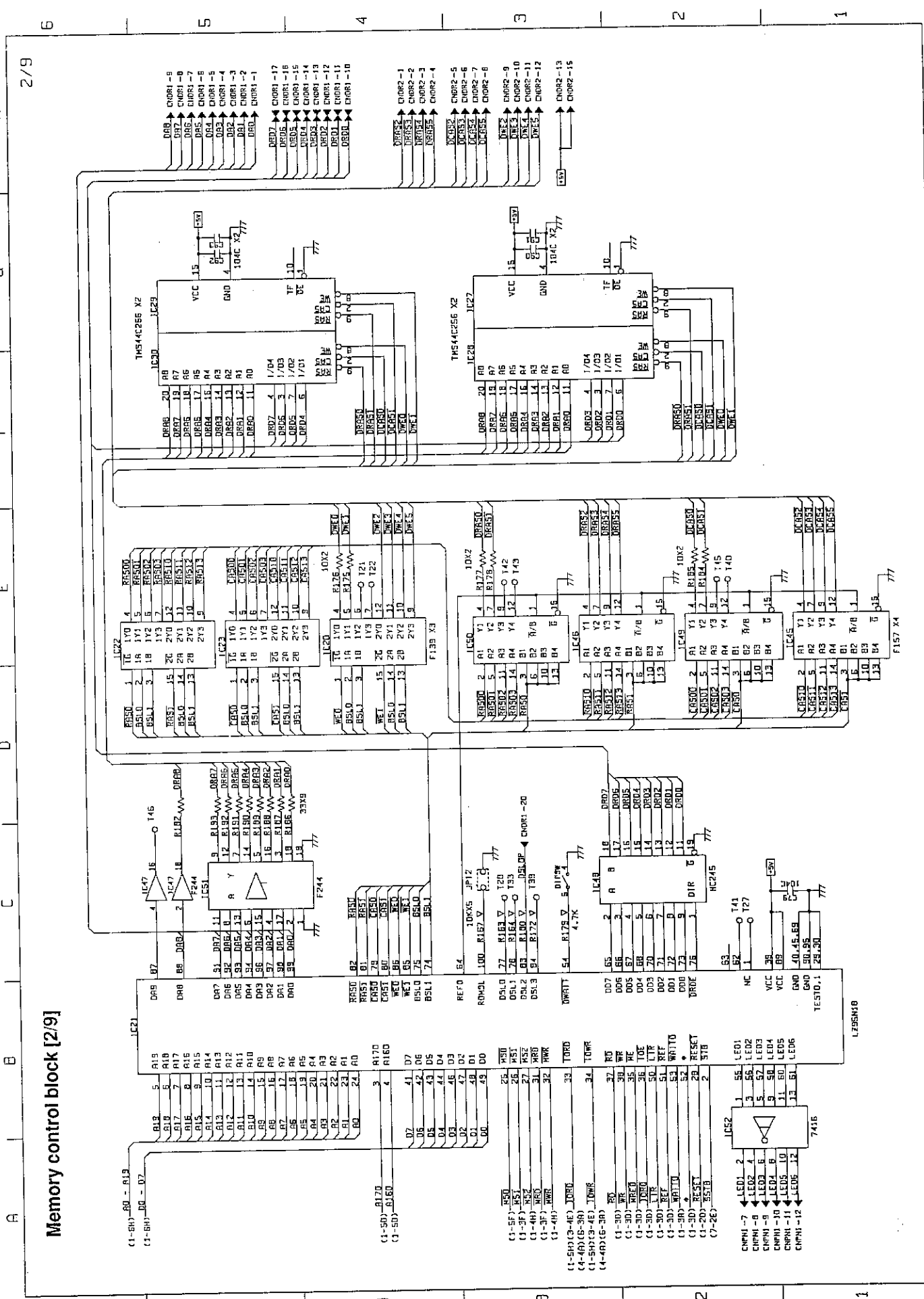
(Fig.11 Overvoltage detect circuit

If ZD52 and ZD51 zenor voltage exceeds the voltage limit of +5V and +24V output, P3 is activated to stop supplying to IC1.

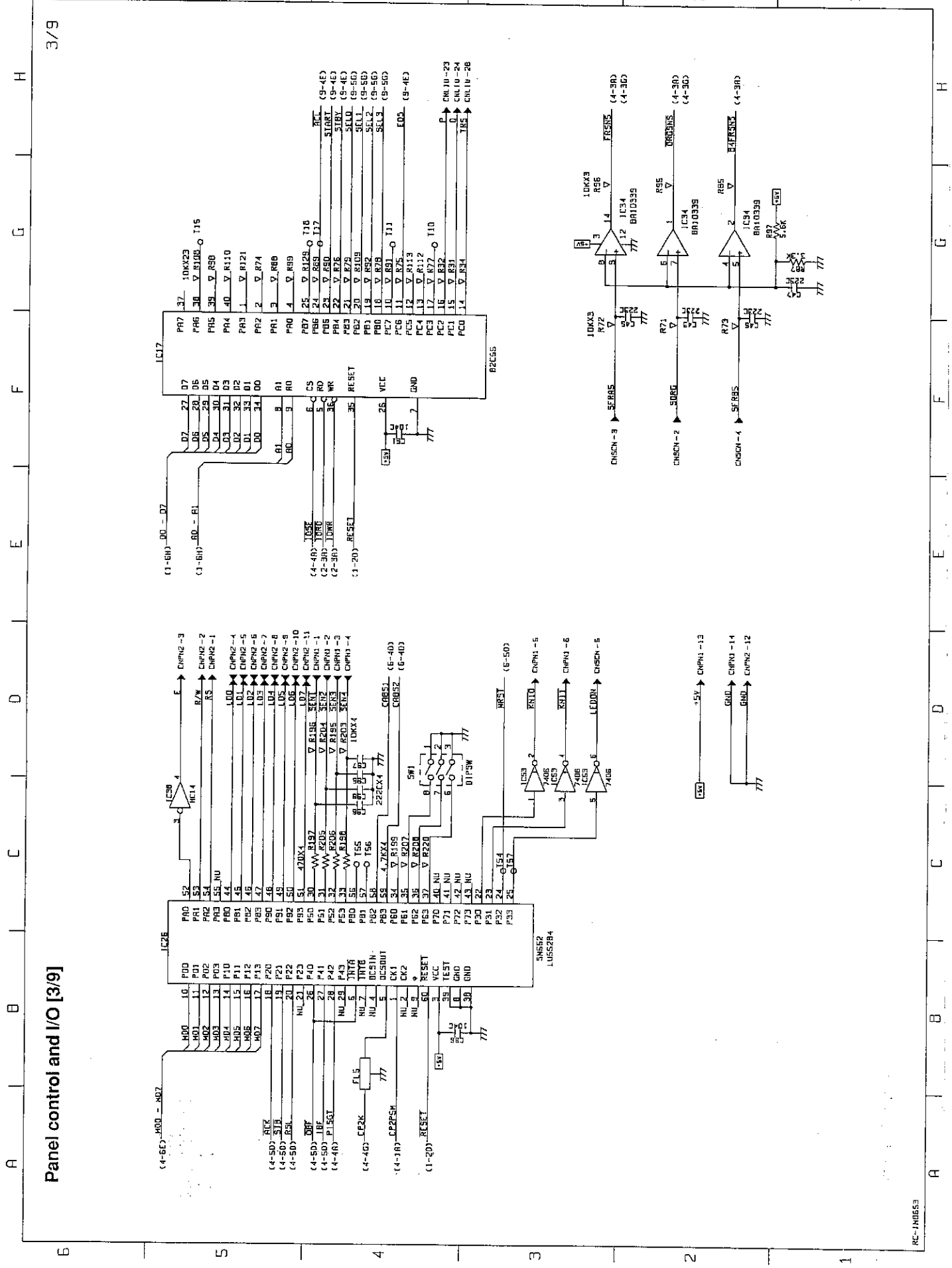
CHAPTER 6. SCHEMATICS AND PARTS LAYOUT



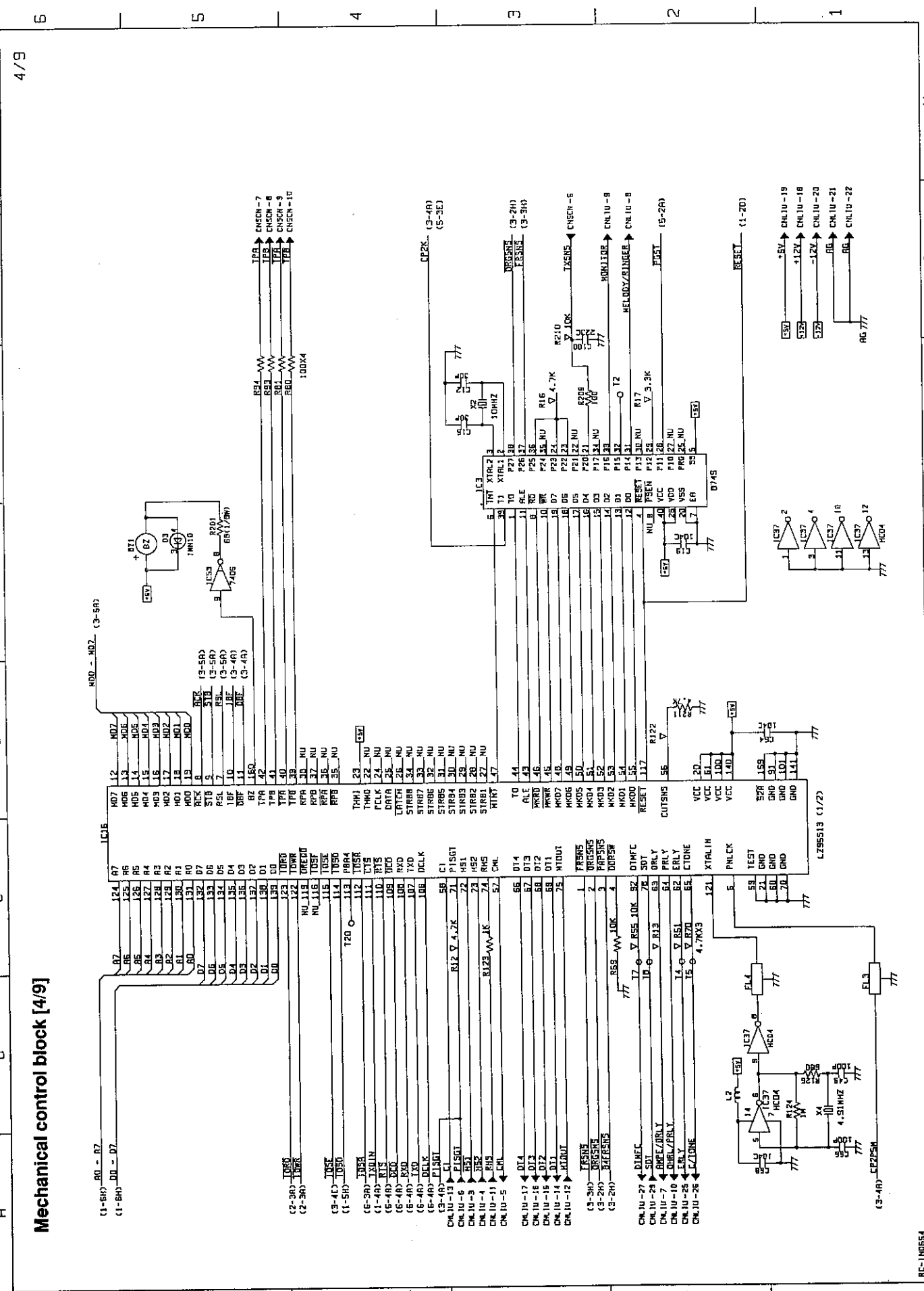
Memory control block [2/9]



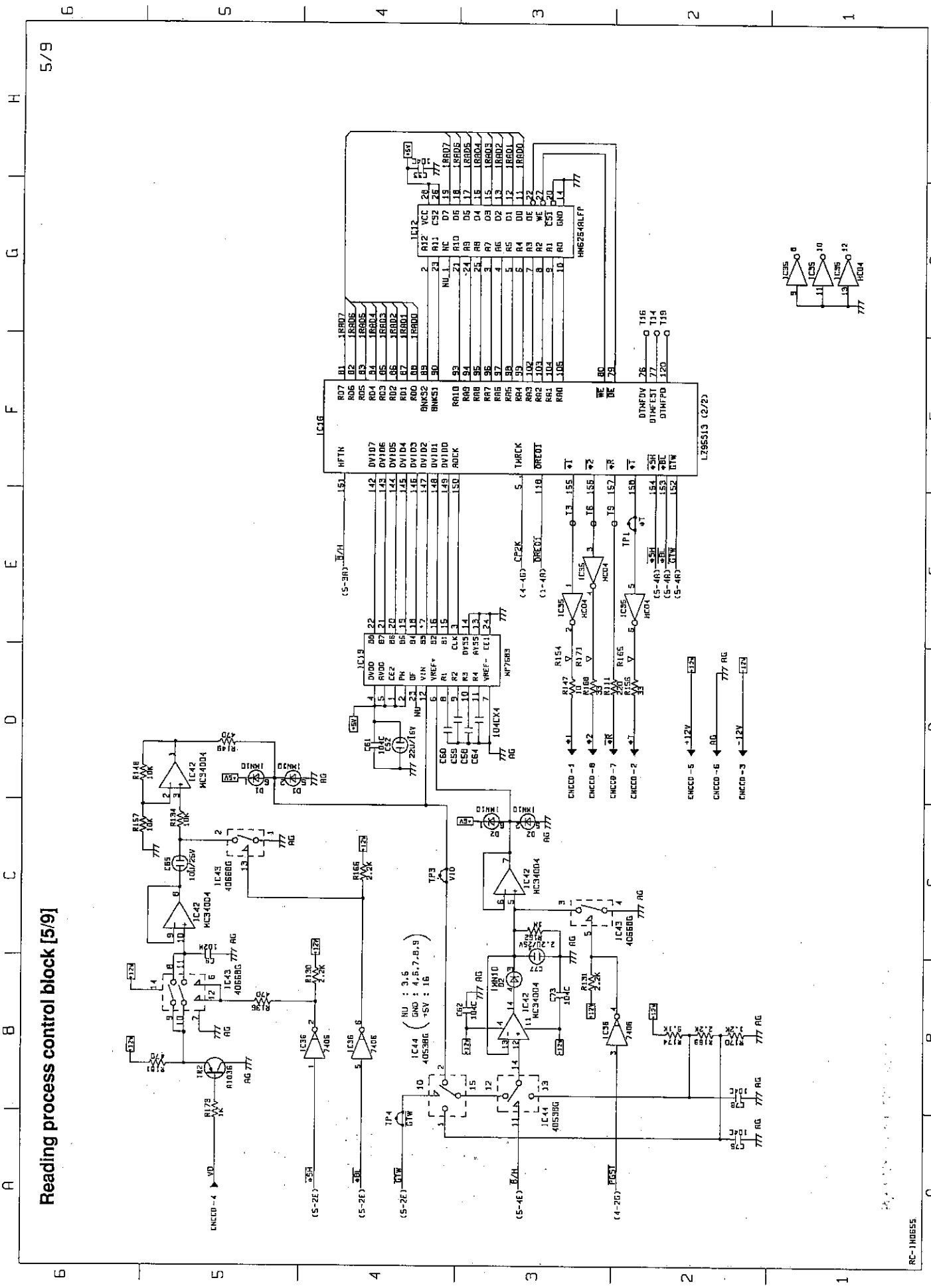
Panel control and I/O [3/9]



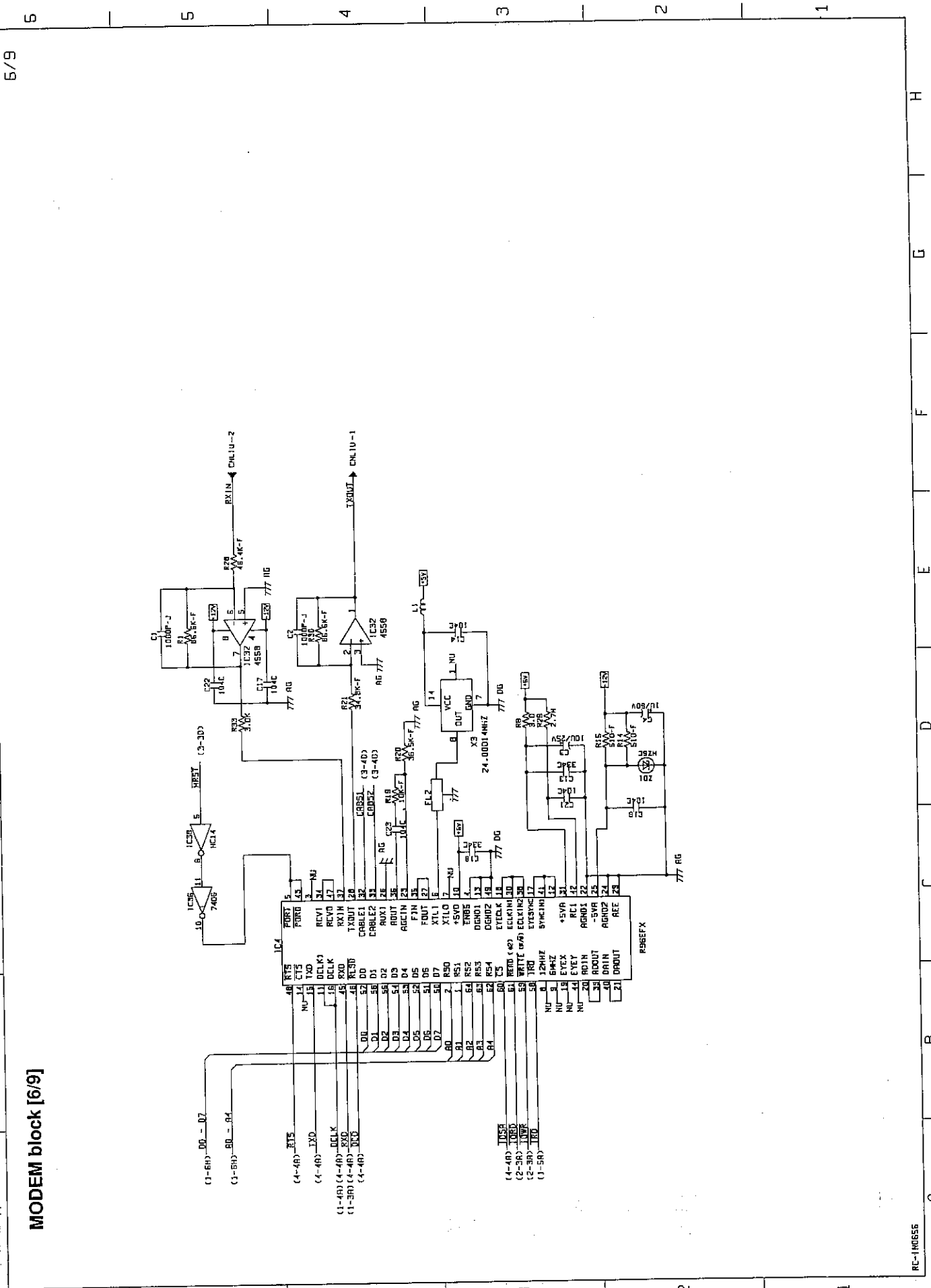
Mechanical control block [4/9]



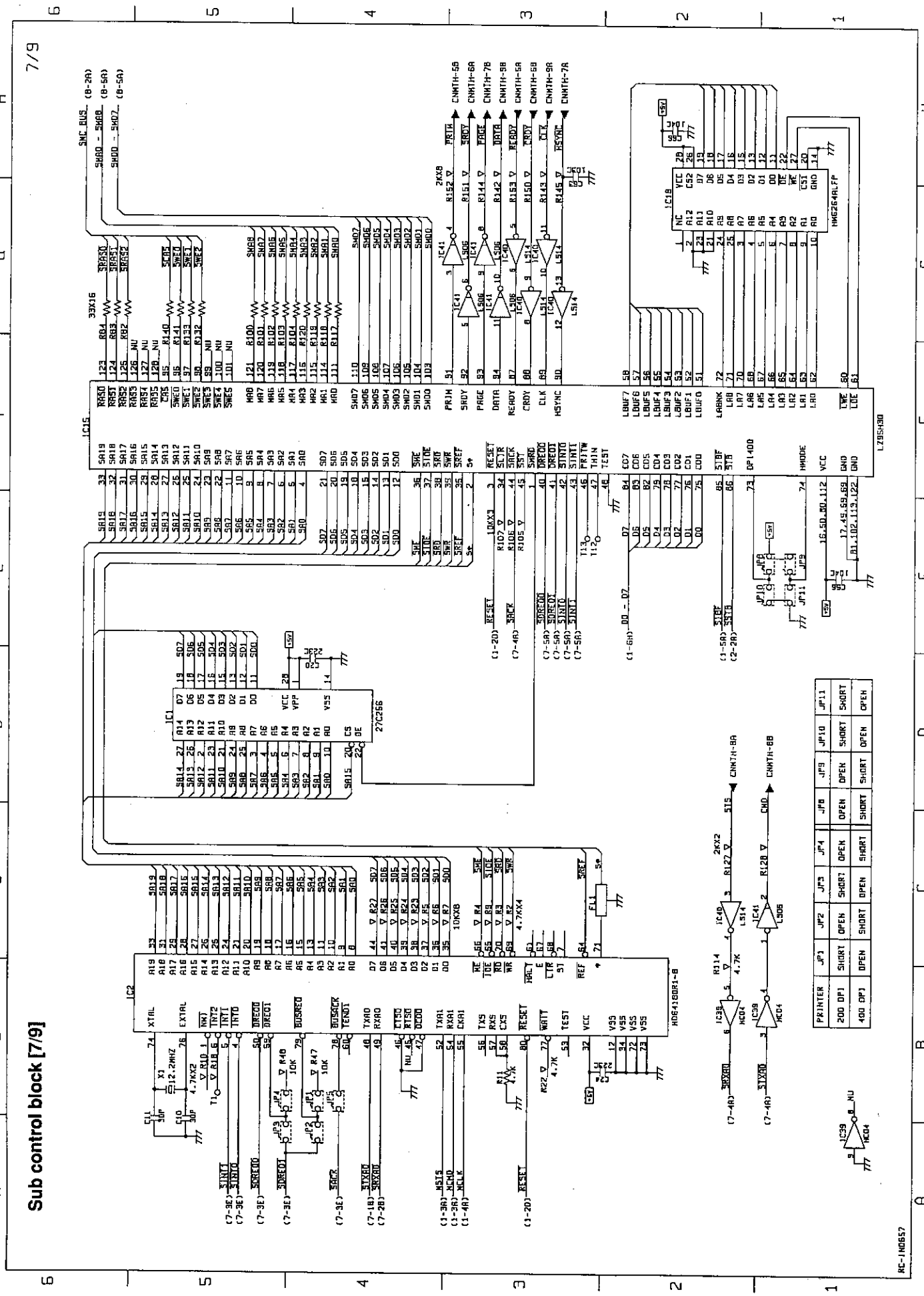
Reading process control block [5/9]



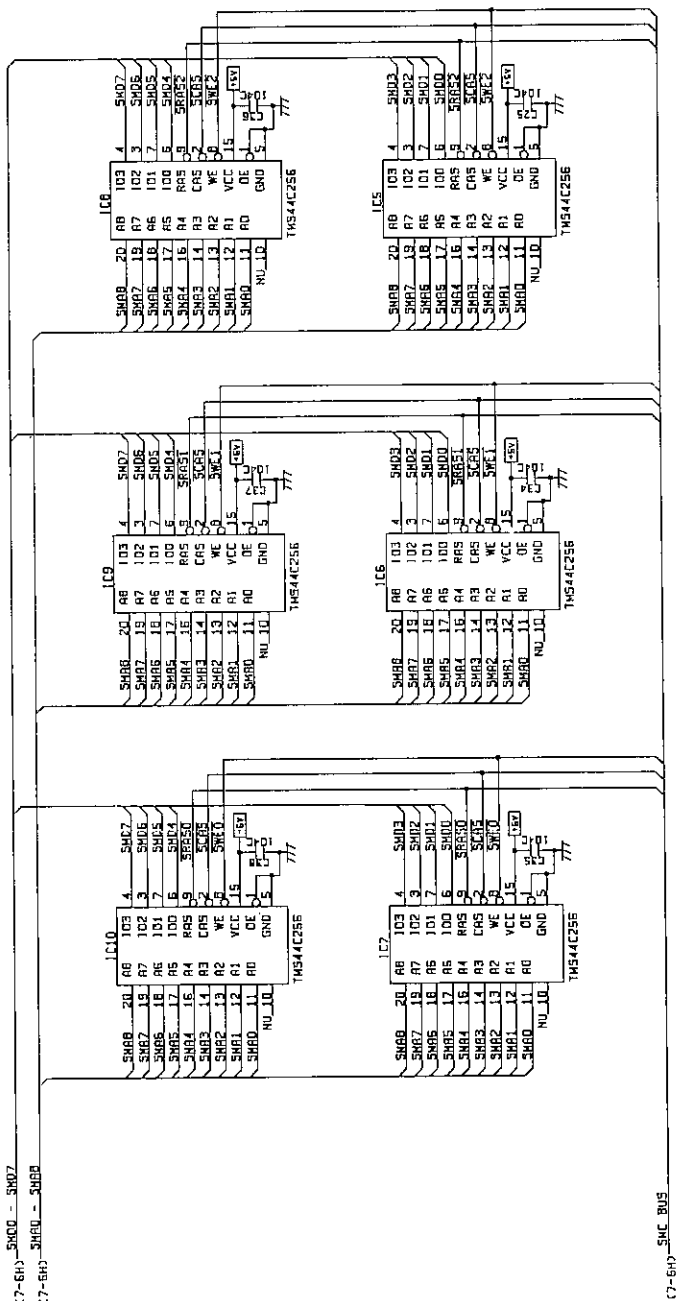
MODEM block [6/9]



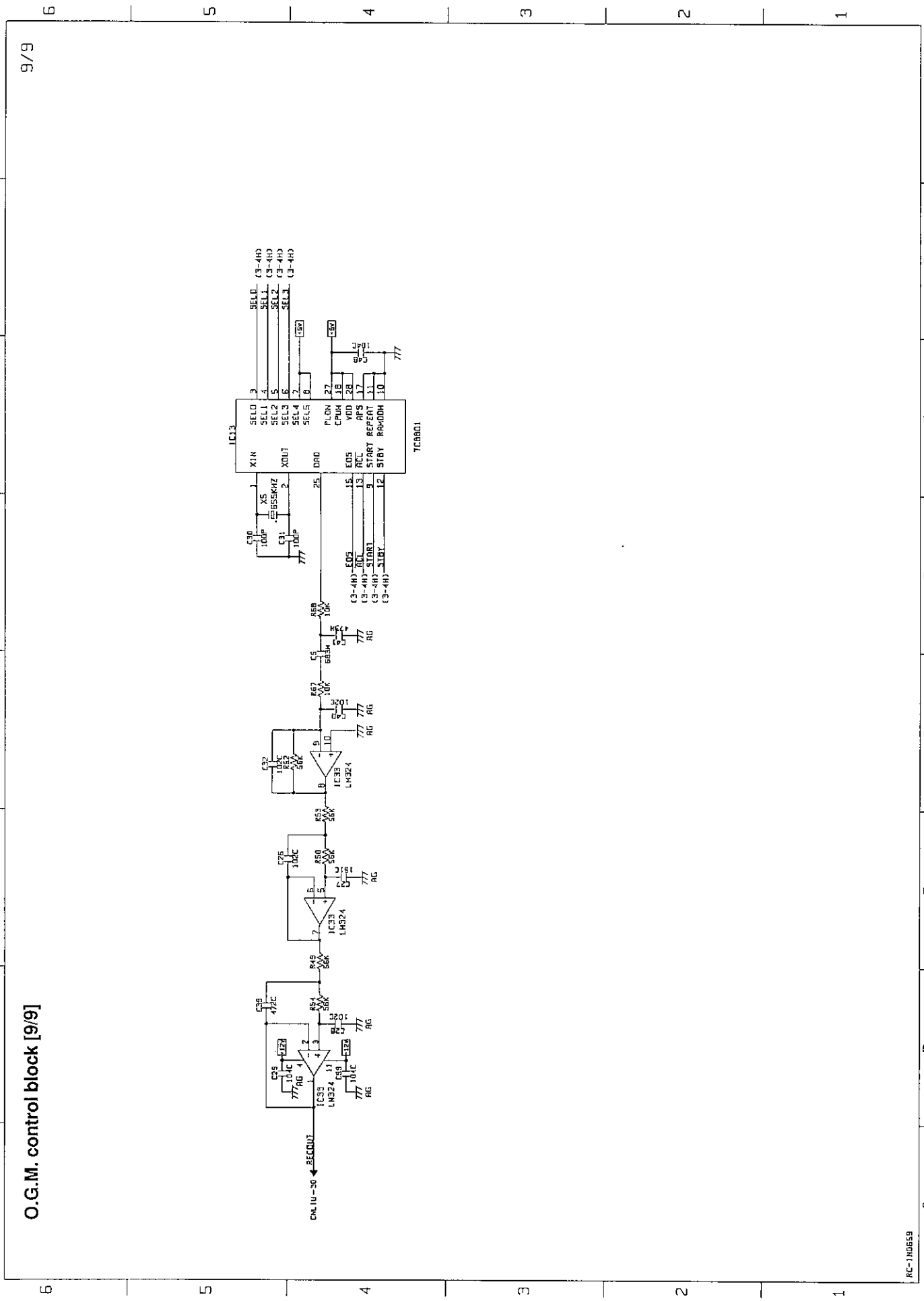
Sub control block [7/9]



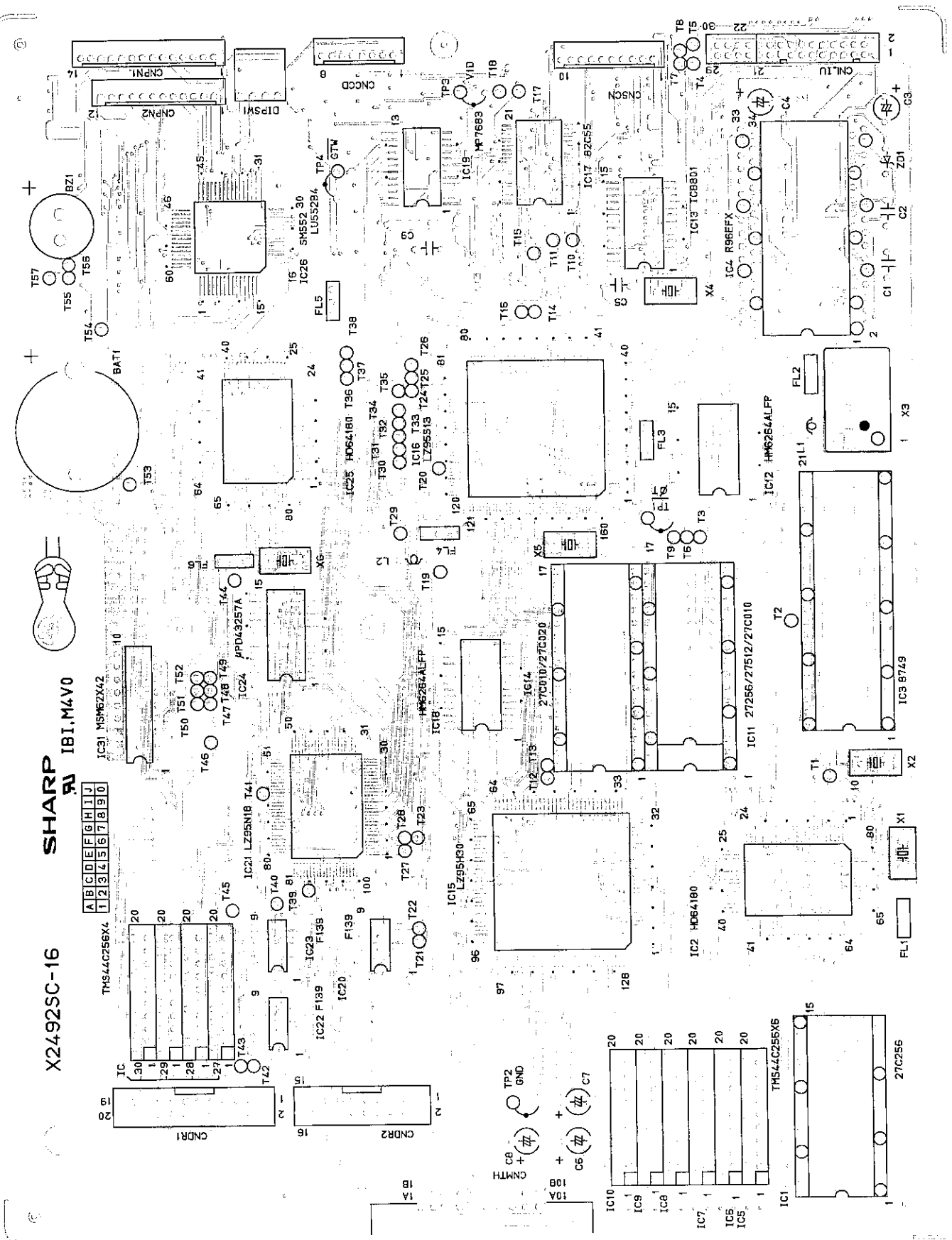
Video memory block [8/9]

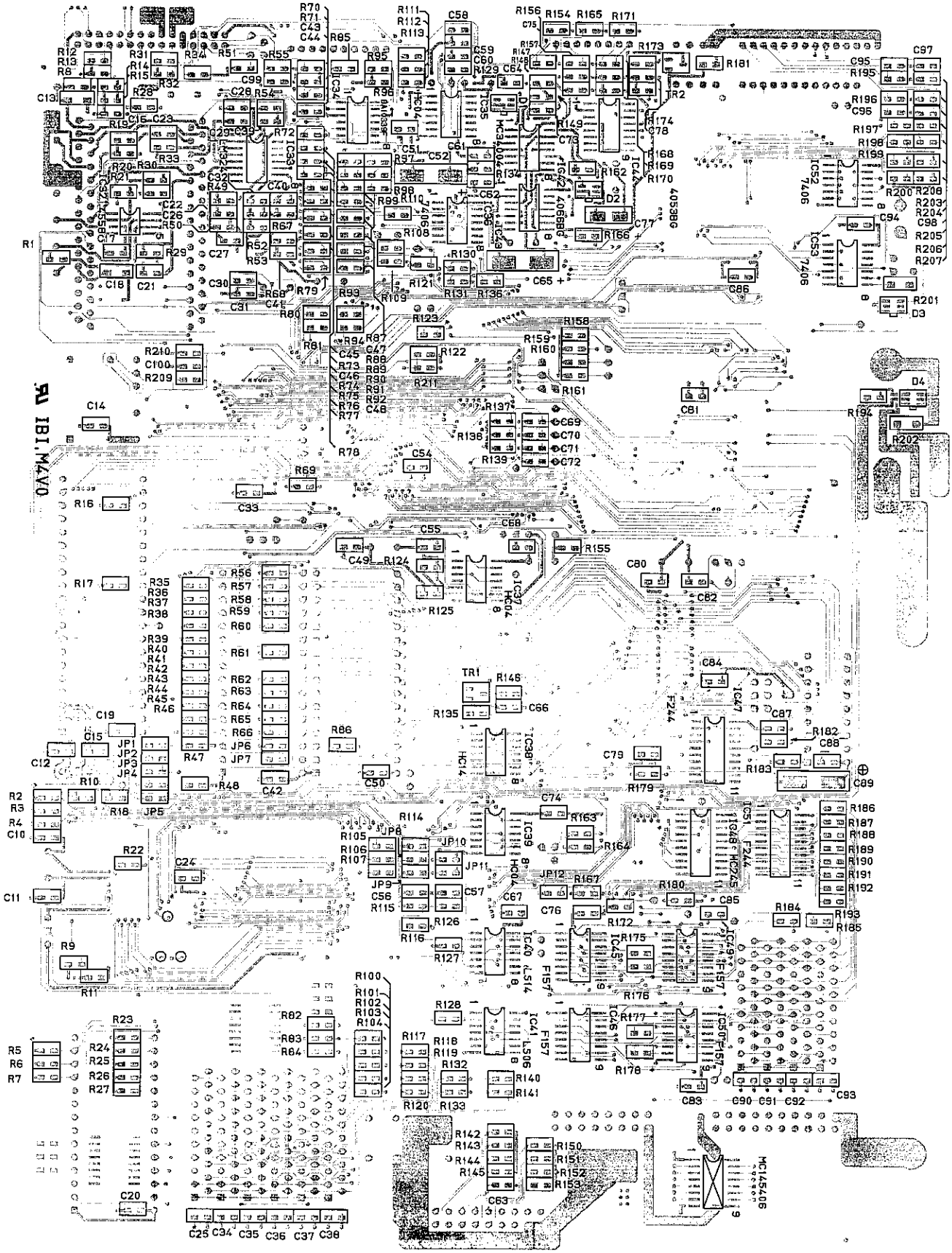


O.G.M. control block [9/9]



Main control unit parts layout

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C43
C44
R65
R111
R112
R113
C58
R156
R154
R165
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C75
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R148
C59
C60
R129
C64
R173
R181
C97
C95
R195
R12
R13
R8
R31
R14
R15
R32
R34
R51
R55
C99
C26
R54
C13
R28
R36
C34
C35
R2
R196
C96
R197
R198
R199
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C16
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C29
C39
R72
C33
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C51
C52
C61
R149
C73
R174
C78
R168
R169
R170
R162
C72
C77
R166
IC52
7406
R200
R208
R203
R204
C94
C98
R205
R206
R207
IC53
7406
R201
D3
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R20
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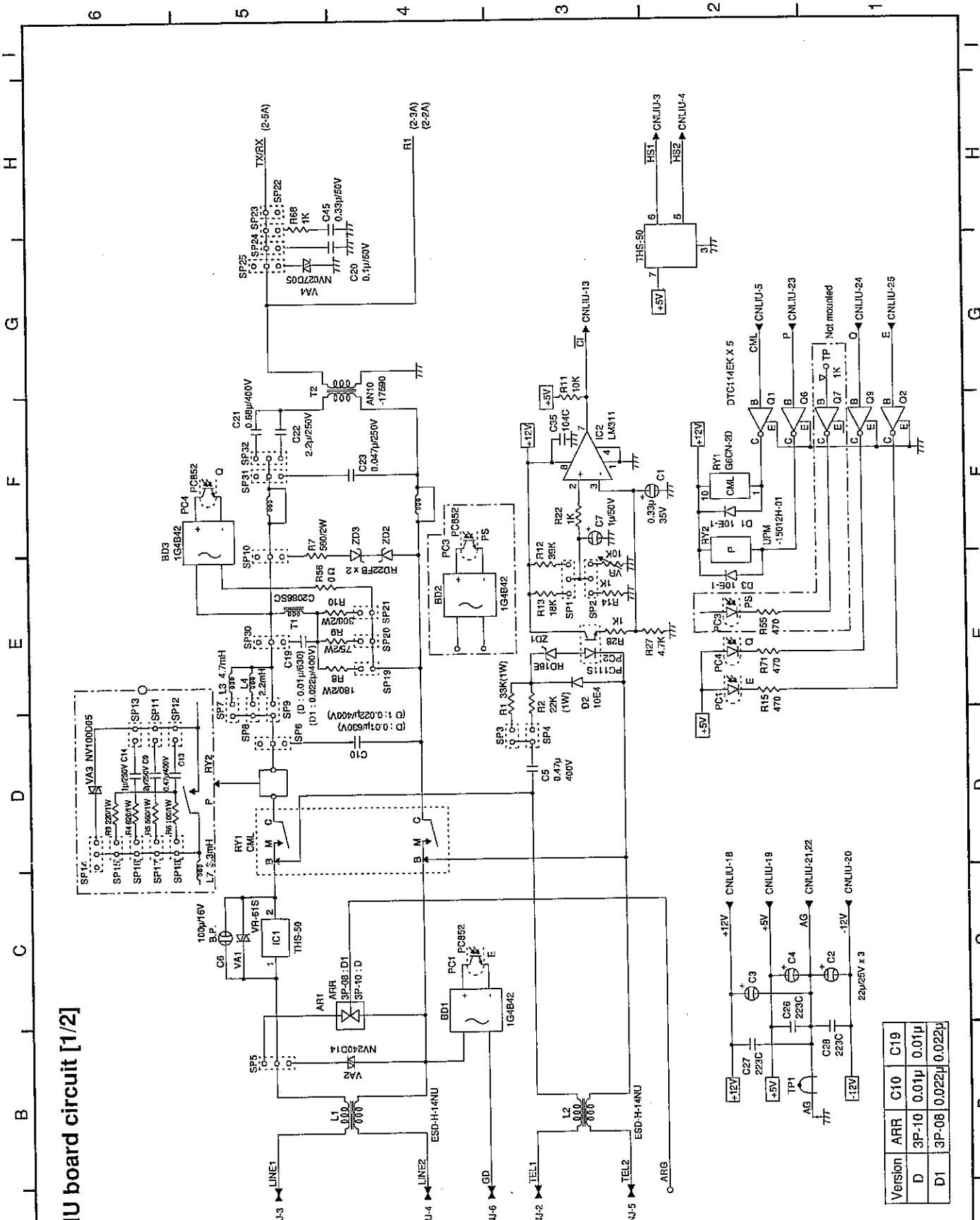
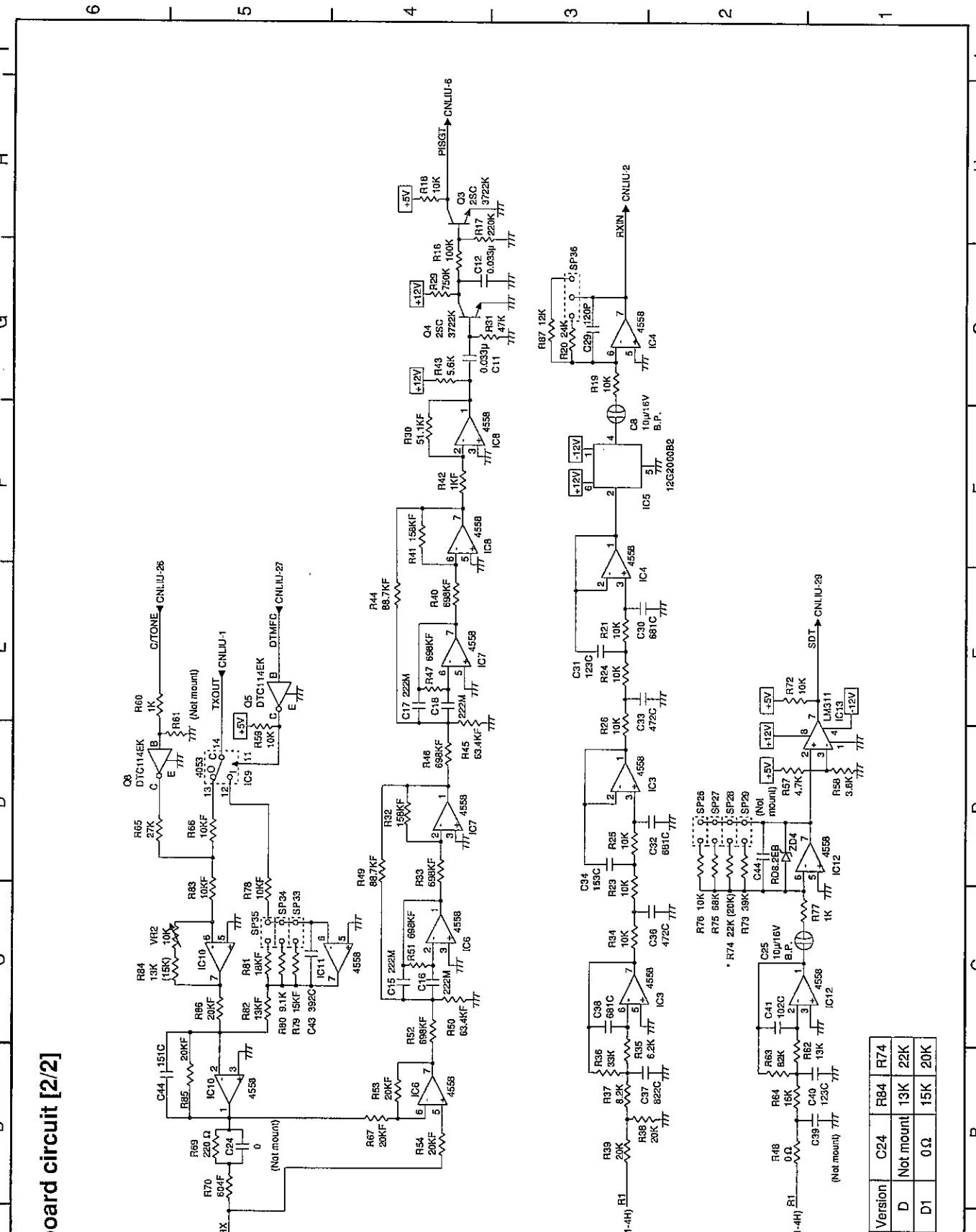
[2] LIU board circuit [1/2]



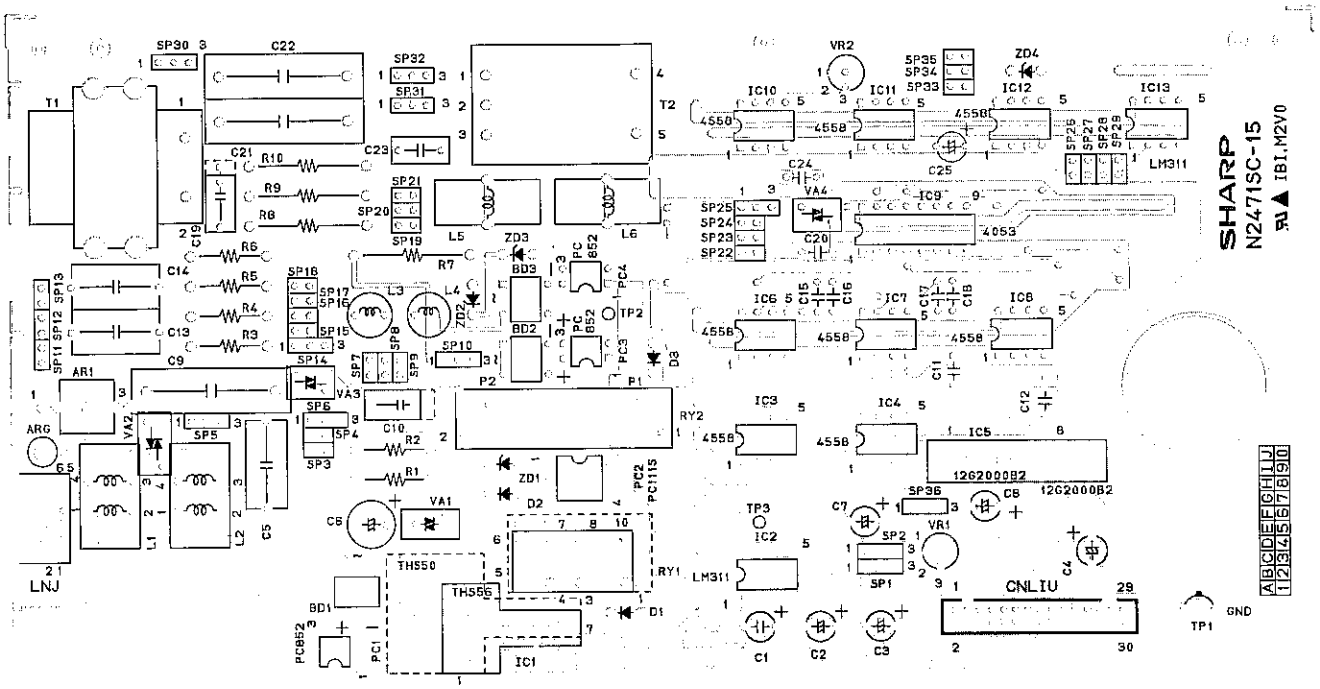
Version	ARR	C10	C19
D	3P-10	0.01μ	0.01μ
D1	3P-08	0.022μ	0.022μ

LIU board circuit [2/2]

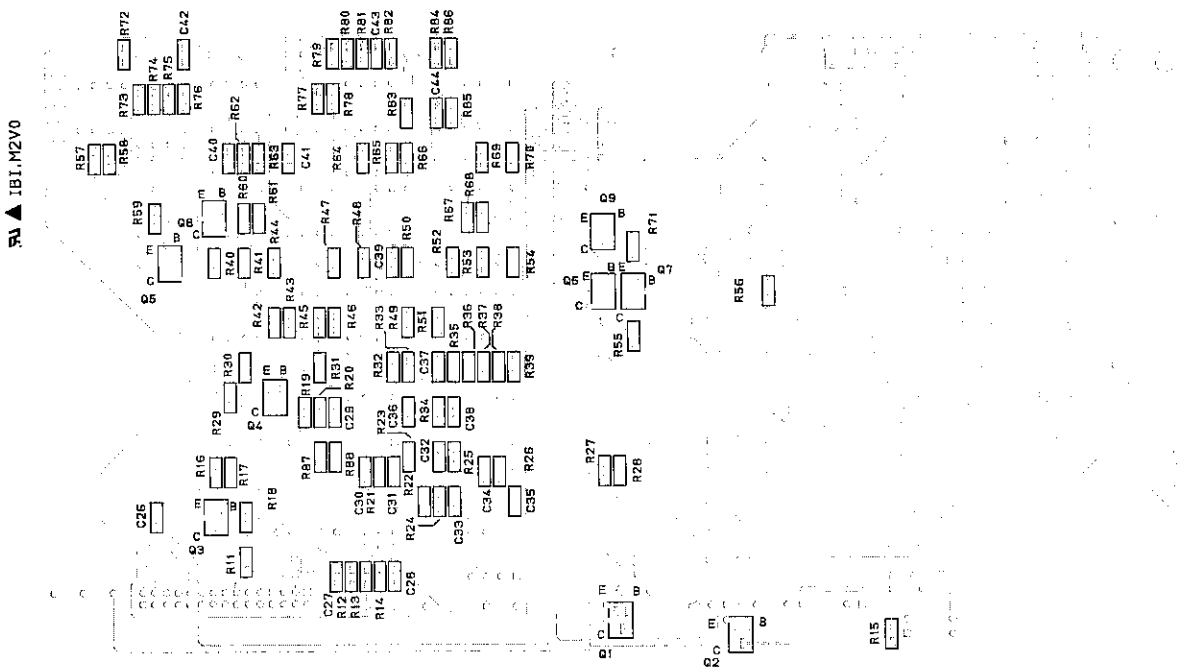


Version	C24	R84	R74
D	Not mount	13K	22K
D1	0Ω	15K	20K

LIU PART LAYOUT

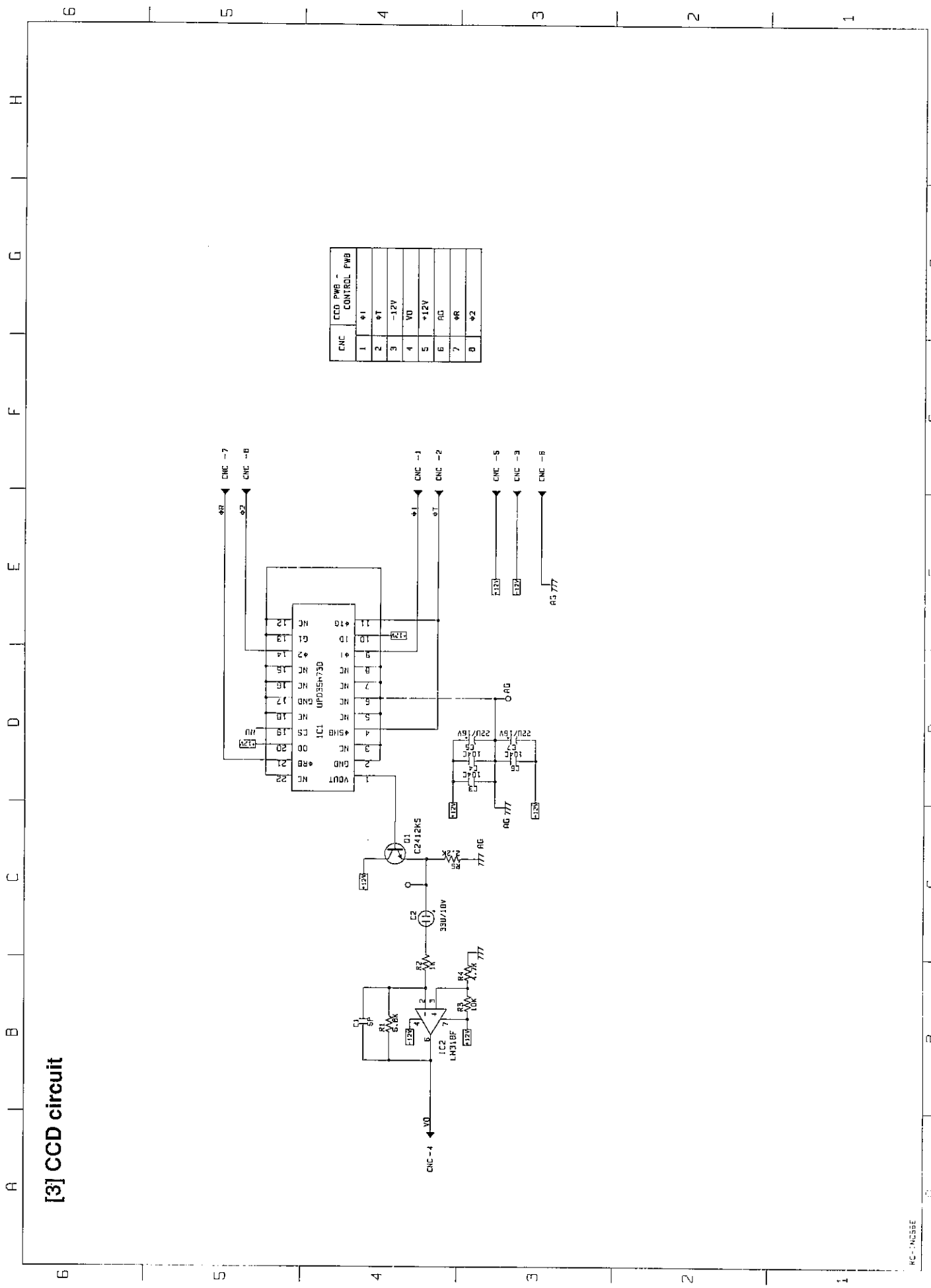


SHARP N2471SC-15 SILK(COMP) (666-5160)

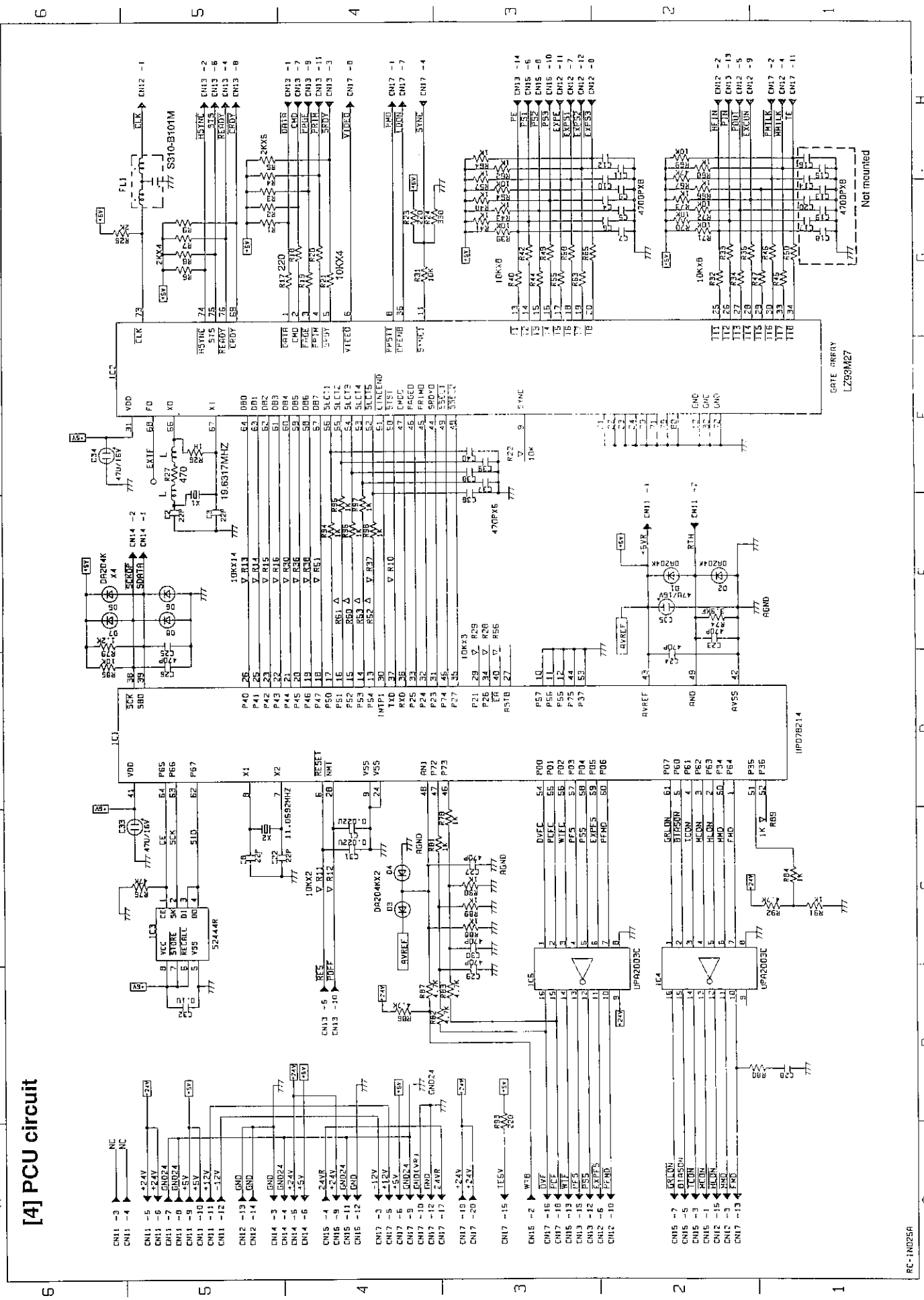


SHARP N2471SC-15 SILK(SOLD) (666-5160)

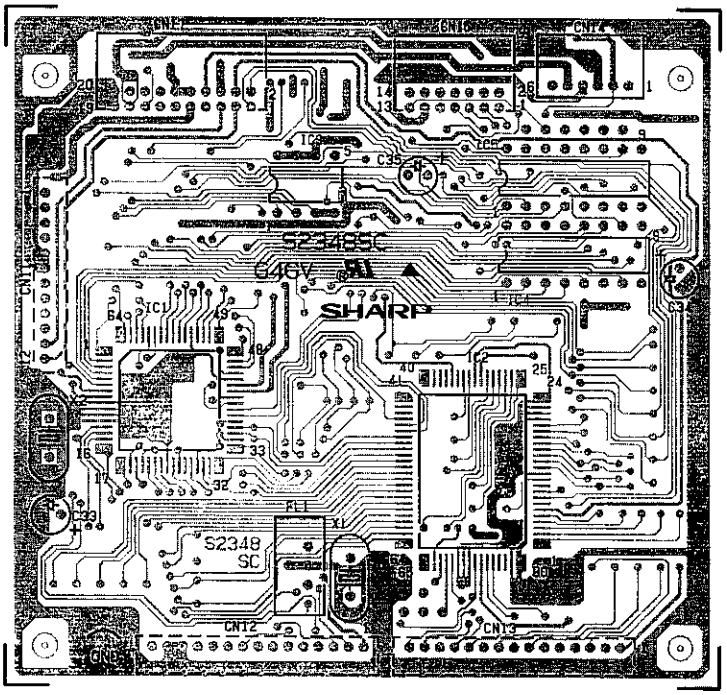
[3] CCD circuit



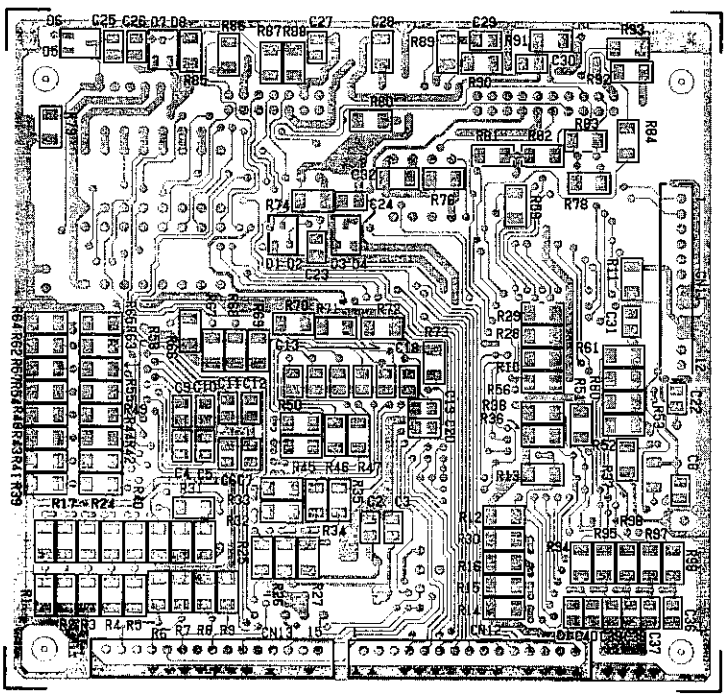
[4] PCU circuit



PCU PWB parts layout

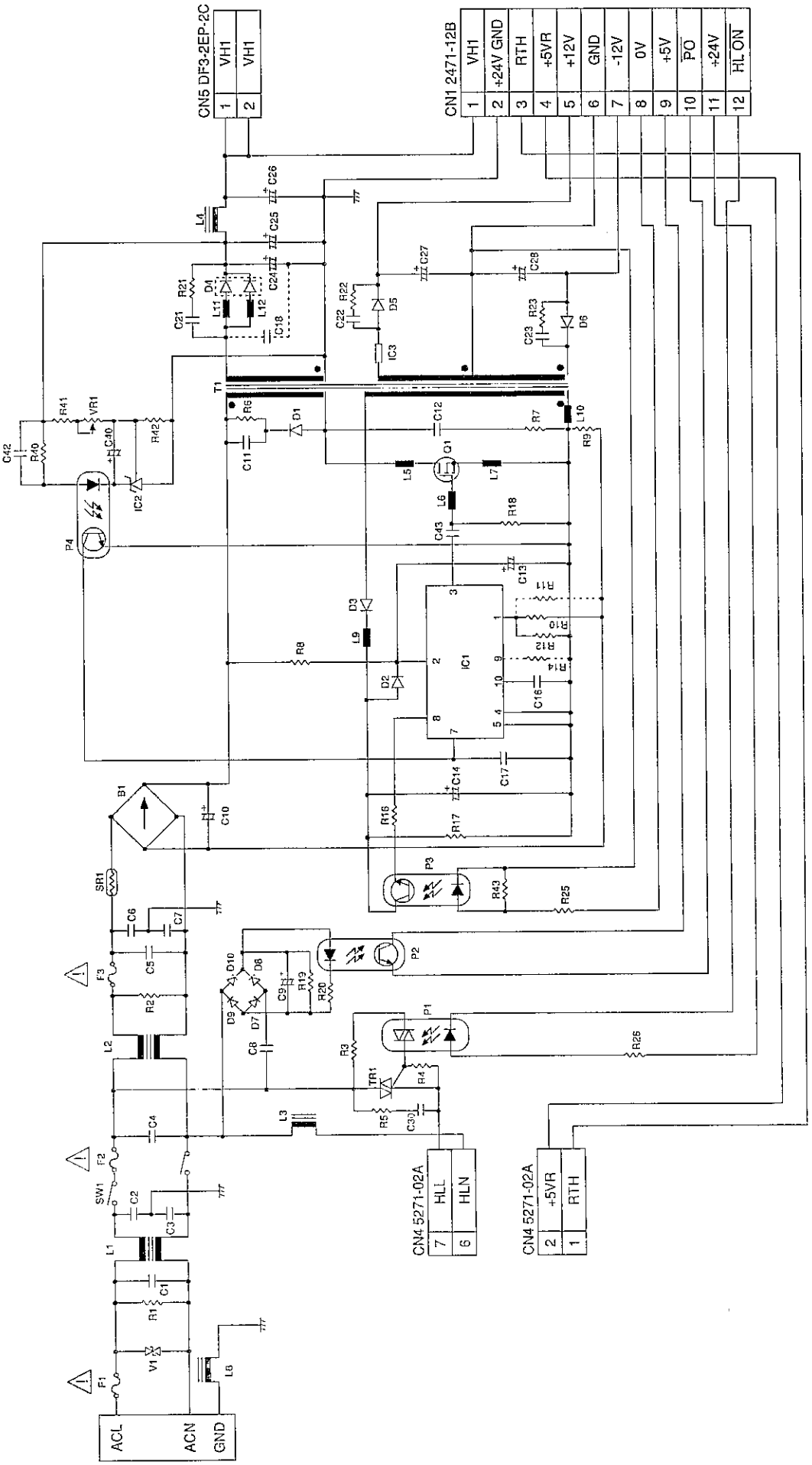


Top view

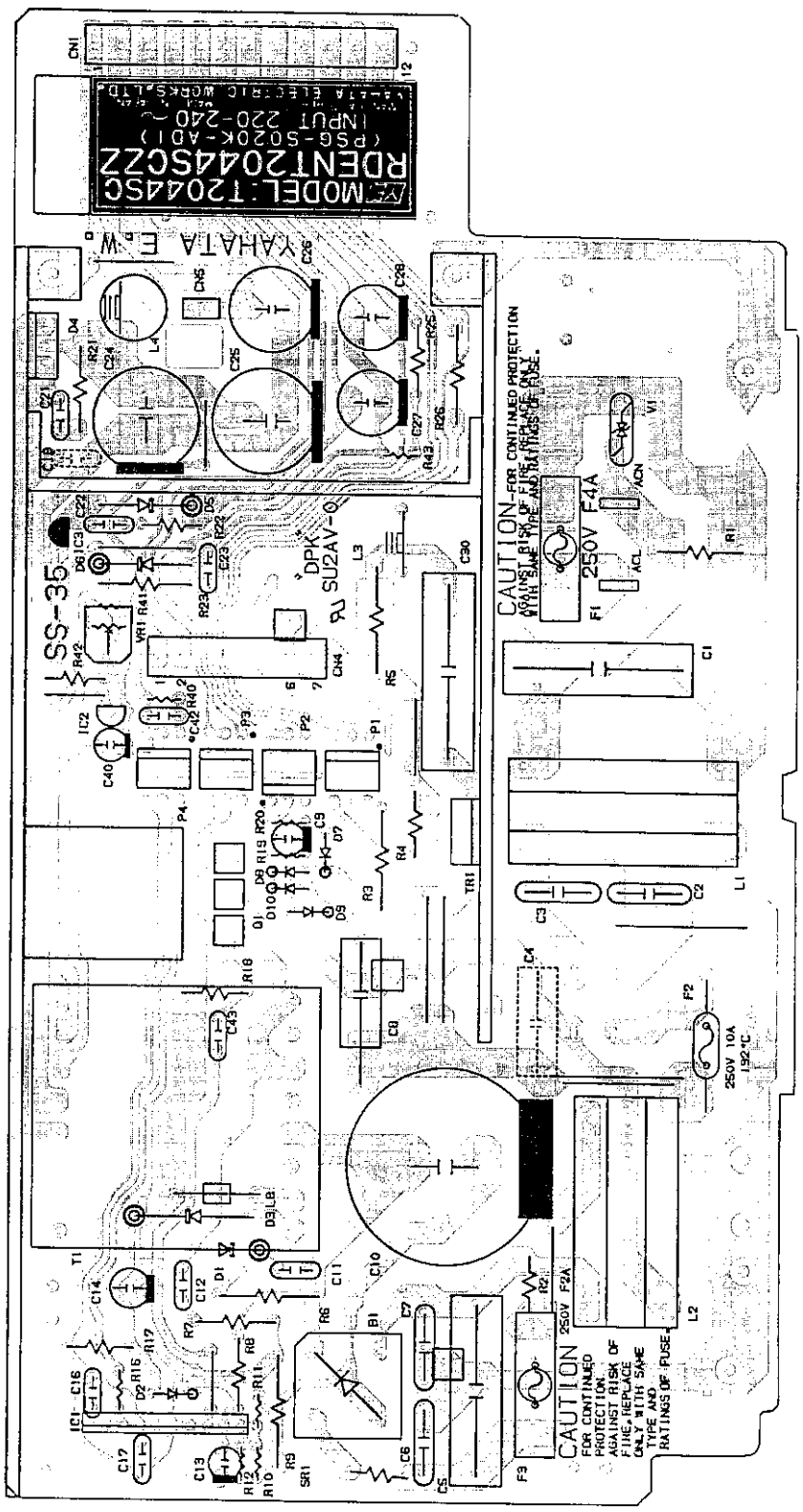


Bottom view

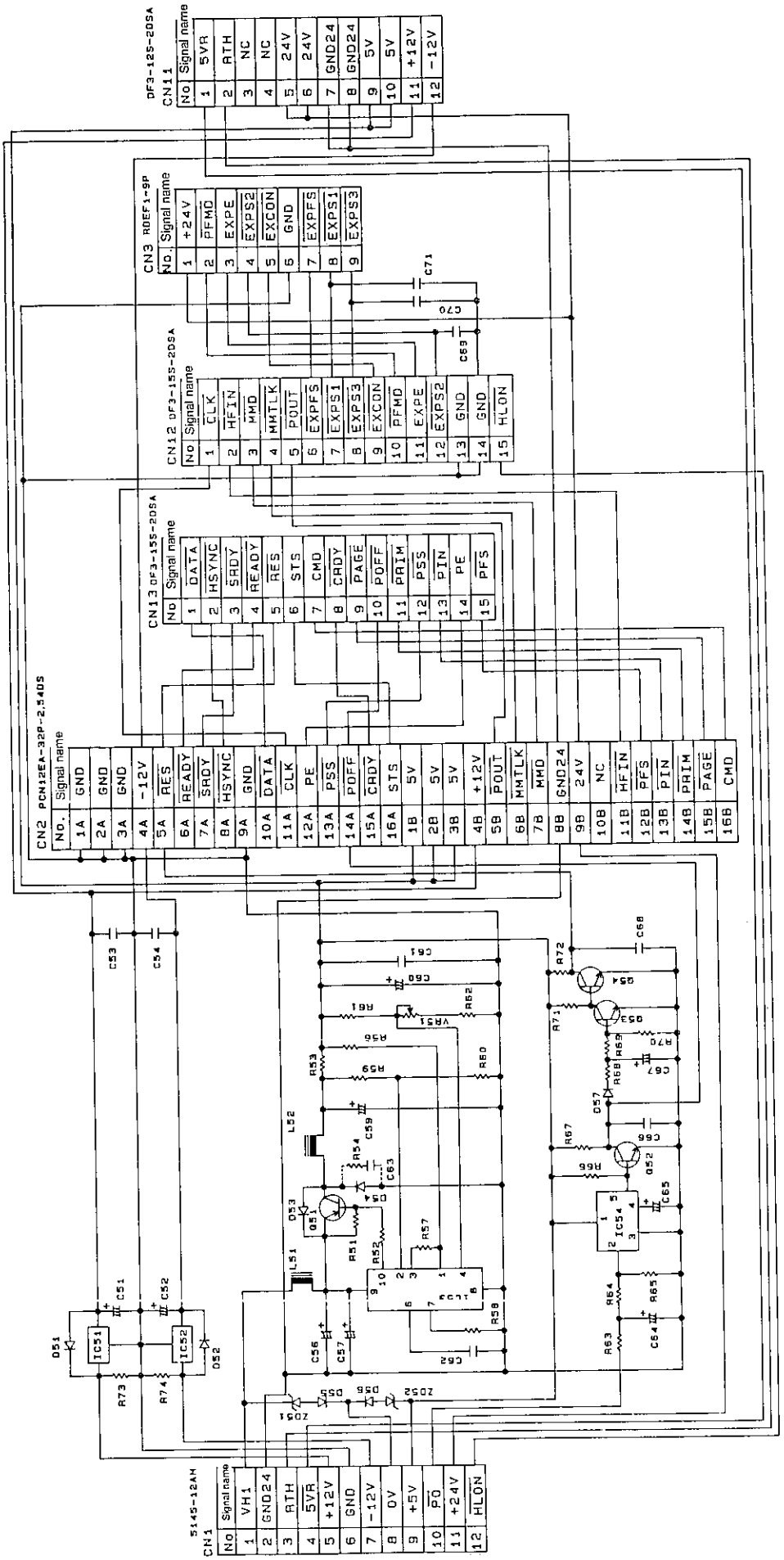
[5] AC power supply circuit



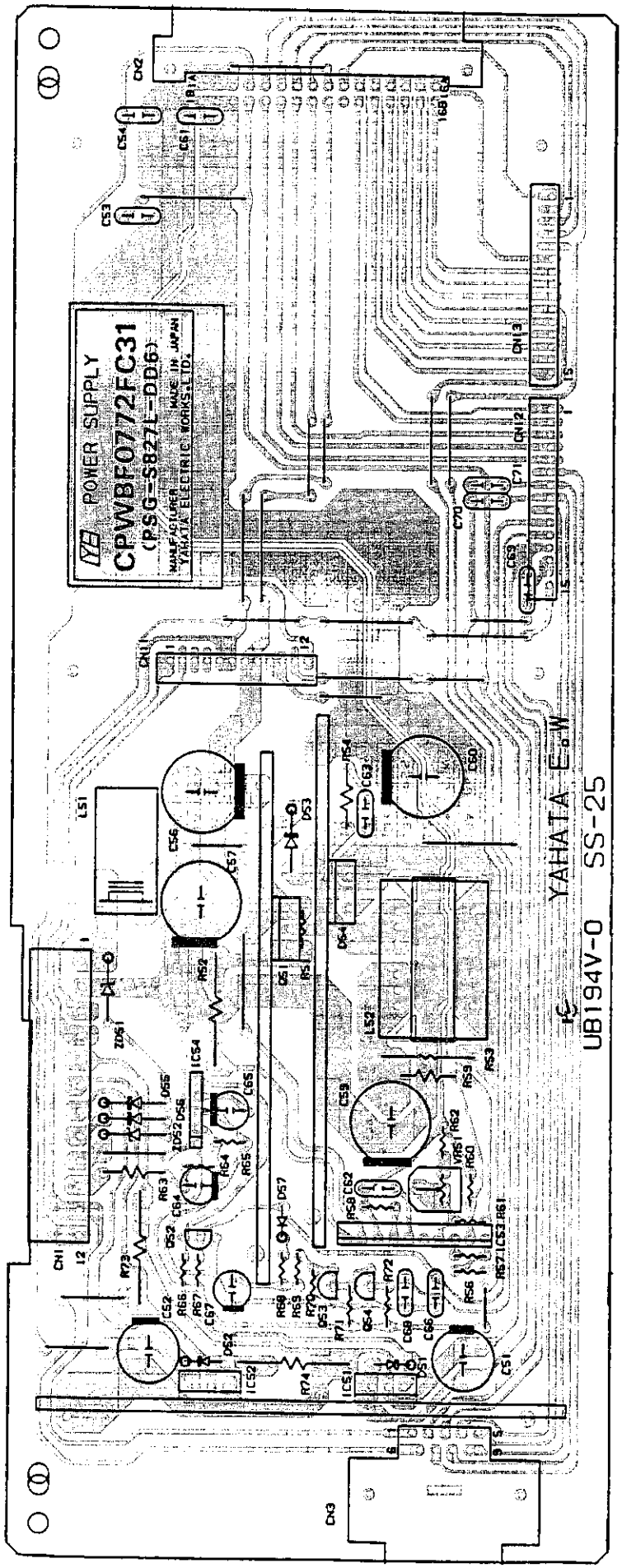
AC power supply circuit parts layout



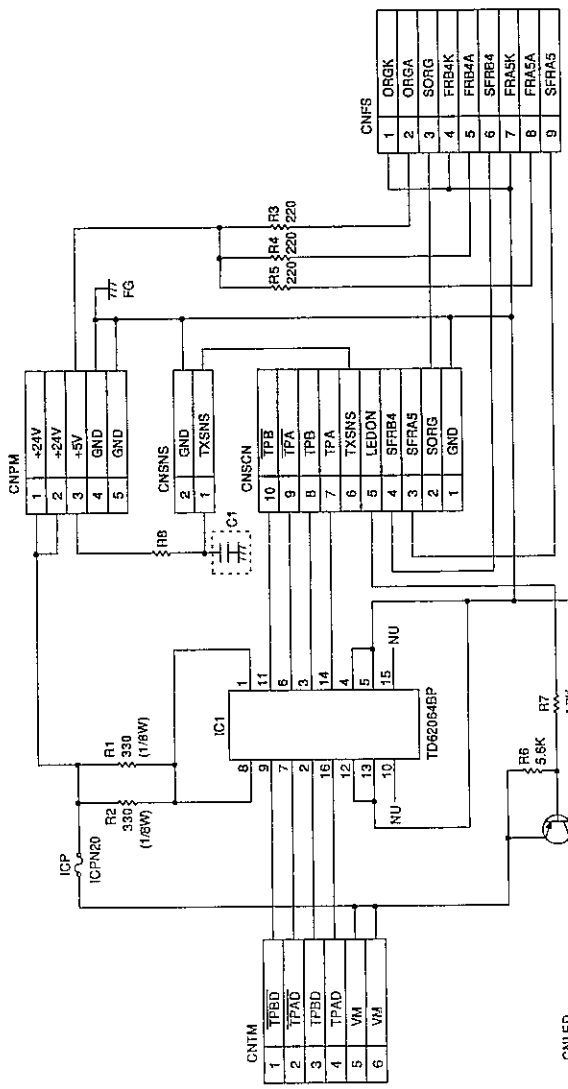
[6] DC power supply circuit



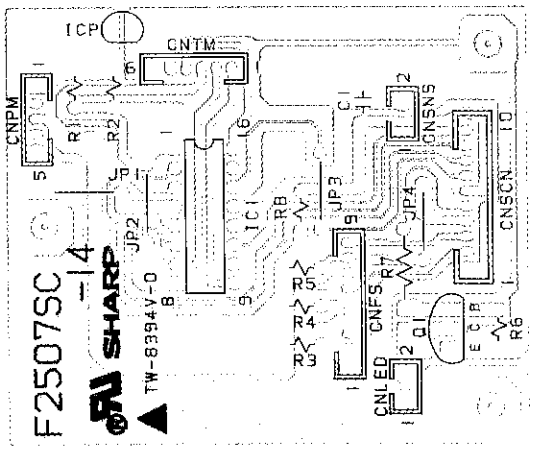
DC power supply parts layout



[7] Scanner connection PWB circuit

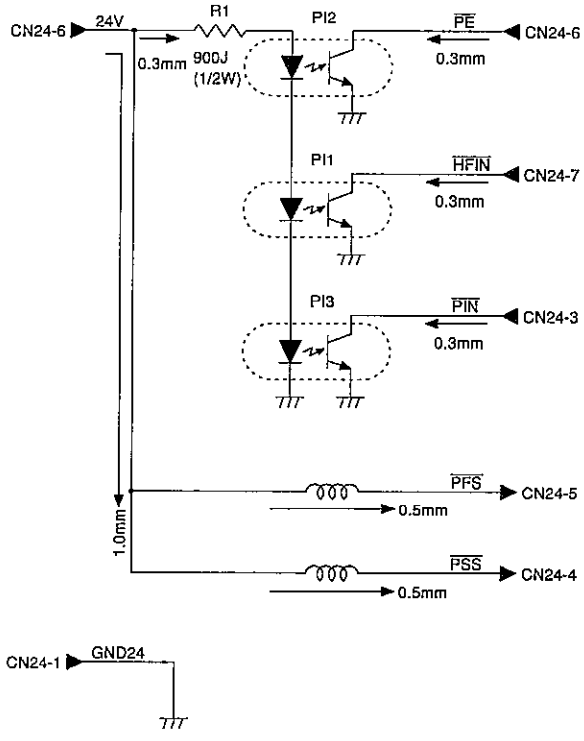


Scanner connection PWB parts layout

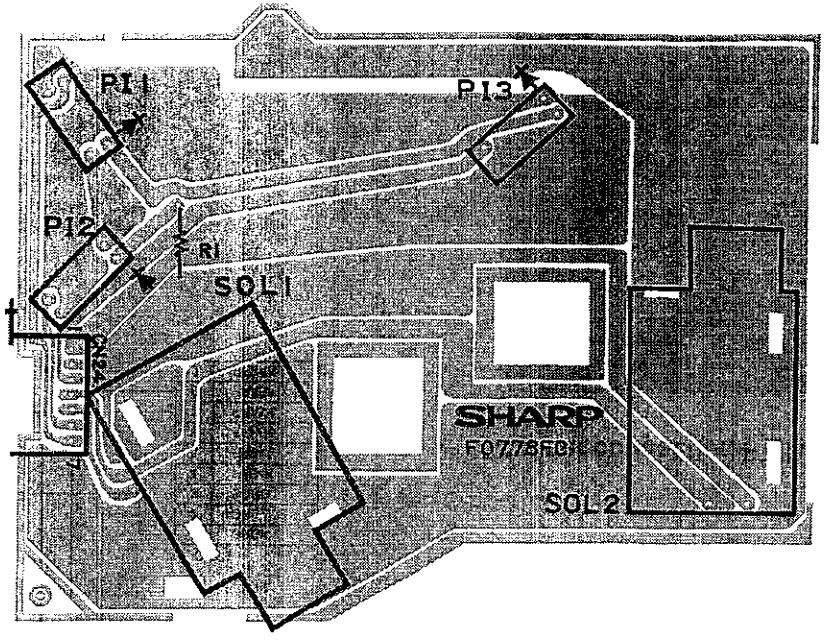


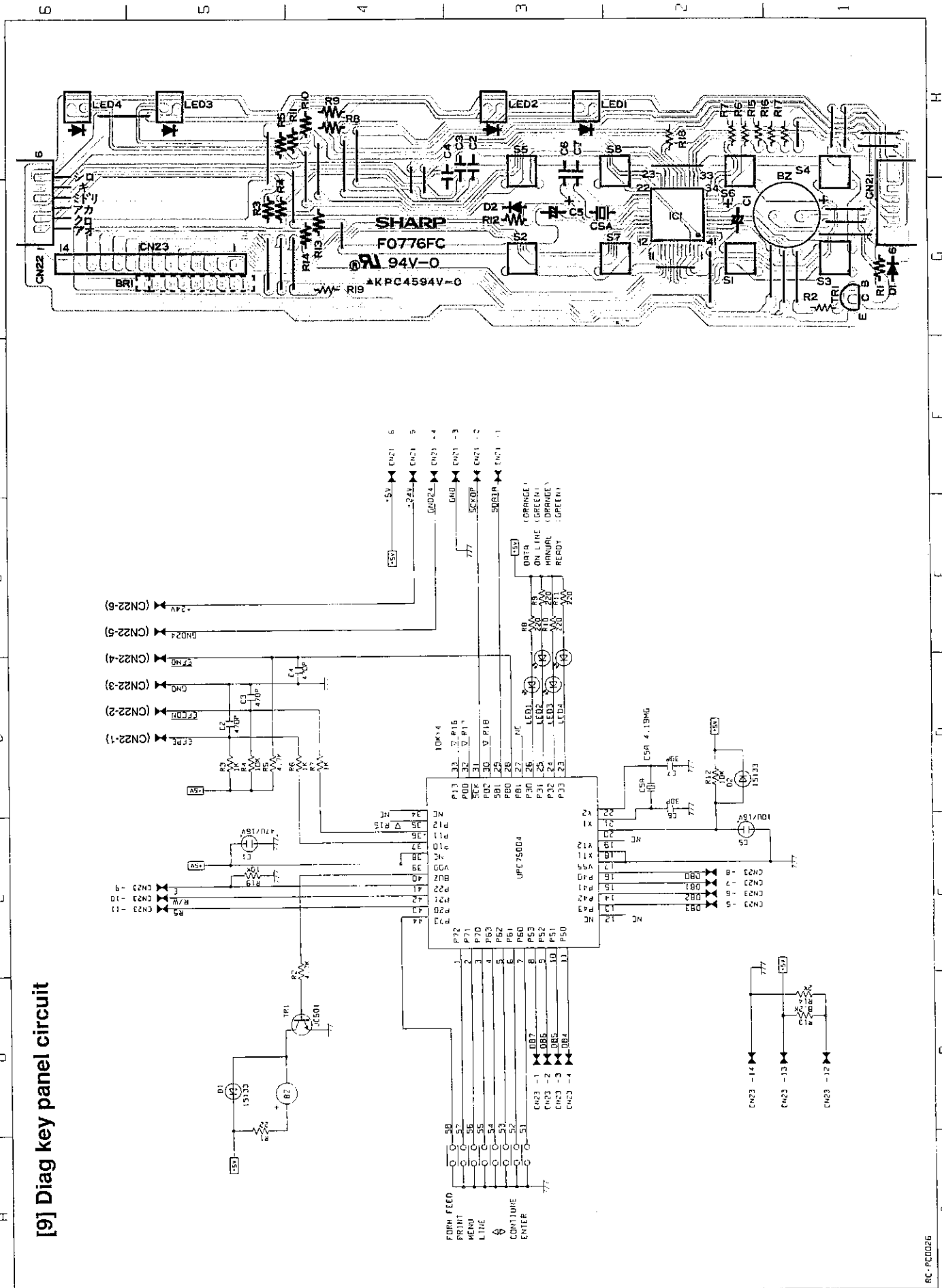
[8] SOLENOID CIRCUIT

Solenoid PWB



SOLENOID P.W.B.



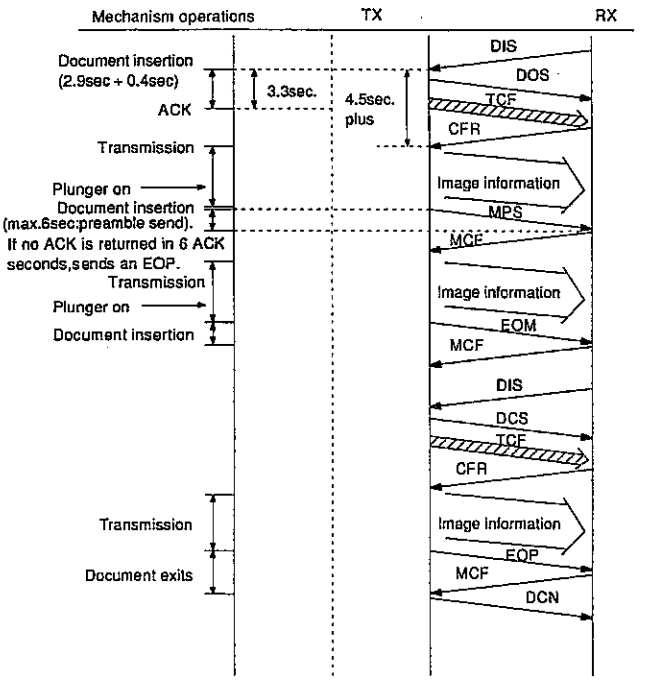


[9] Diag key panel circuit

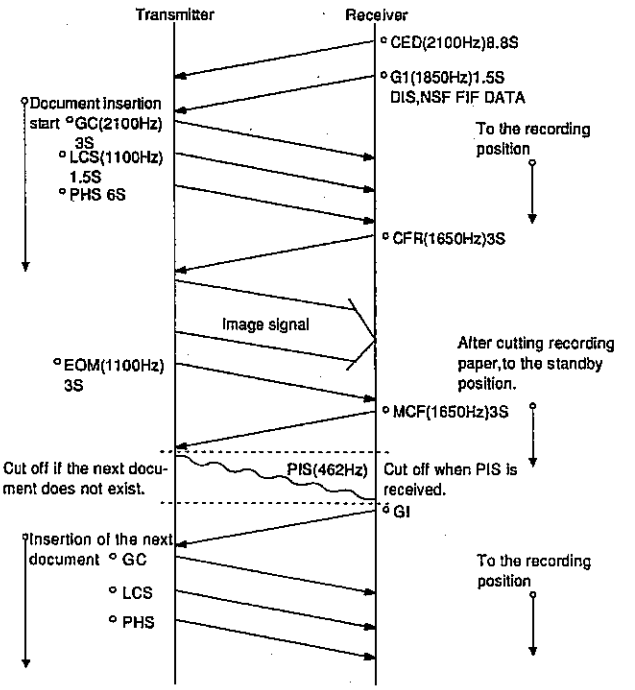
CHAPTER7. PROTOCOL

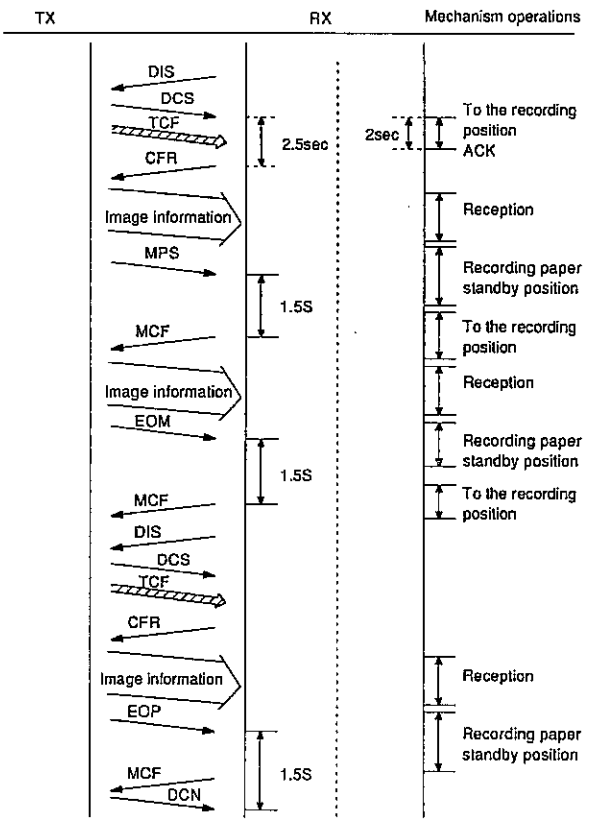
[1] Protocol

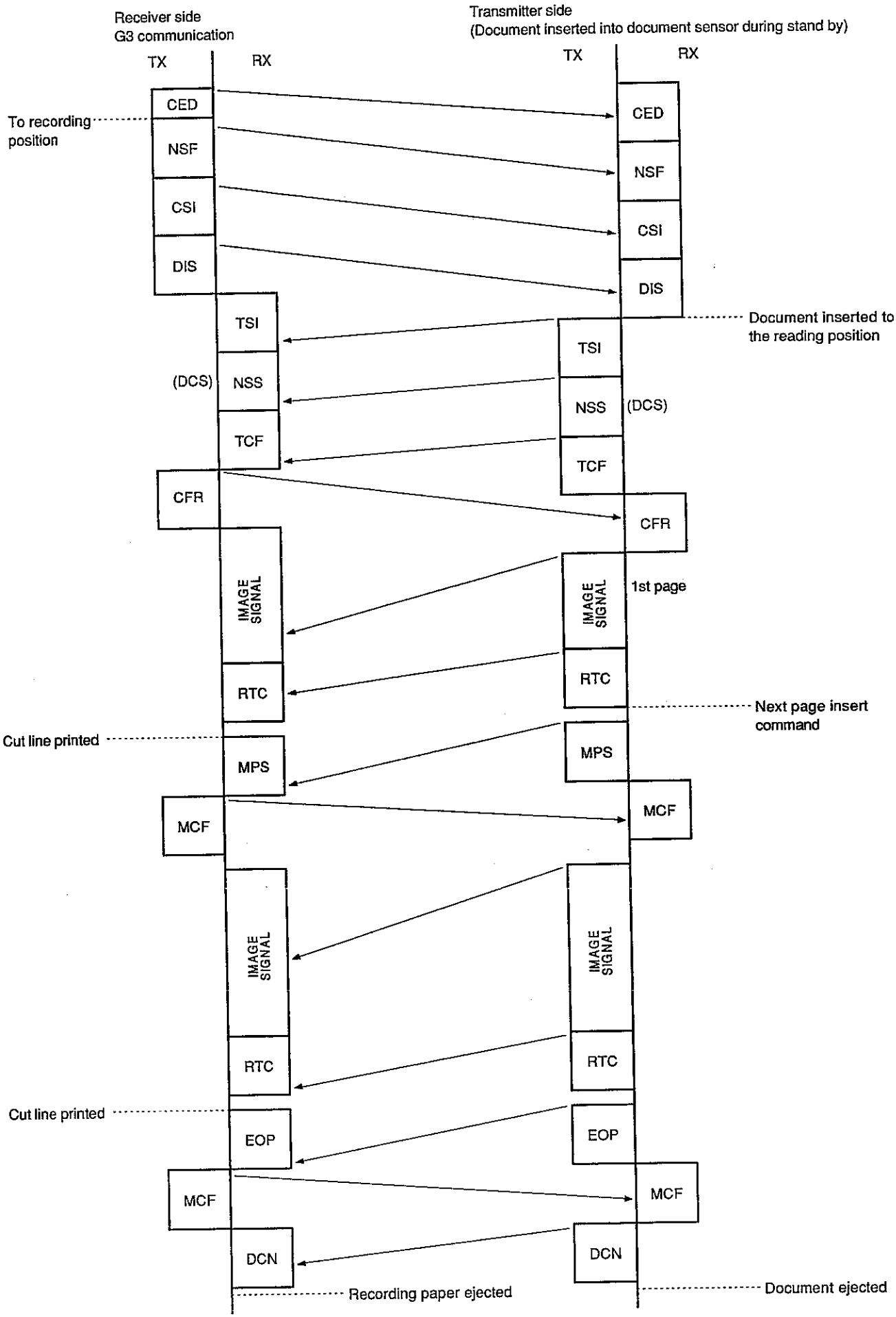
High-Speed Procedure



G2 Procedure






Receiver side
G3 communication
TX
RX
Transmitter side
(Document inserted into document sensor during stand by)
TX
RX
To recording position
CED
NSF
CSI
DIS
CED
NSF
CSI
DIS
Document inserted to the reading position
TSI
(DCS)
NSS
TCF
TSI
NSS
(DCS)
TCF
CFR
CFR
IMAGE SIGNAL
RTC
IMAGE SIGNAL
1st page
RTC
Next page insert command
Cut line printed
MPS
MPS
MCF
MCF
IMAGE SIGNAL
RTC
IMAGE SIGNAL
RTC
Cut line printed
EOP
EOP
MCF
MCF
DCN
DCN
Recording paper ejected
Document ejected

CHAPTER 8. OTHERS

[1] Service tools

No.	PARTS CODE	DESCRIPTION	Q'TY	PRICE RANK
1	C P W B N 2 4 4 8 S C 0 2	Control board extension board unit	1	BW
2	U K O G M 2 0 1 1 S C Z A	Optical adjustment plate	1	BN
3	C P N L C 0 1 8 5 F C S 2	Key panel for printer diagnostics	1	BL

1. Control board extension board unit

1. Remove the control board.
2. Insert the extension board A.
3. Insert the cable onto the extension board.
4. Connect CN101 on the extension board B to CNMTH on the control board.
5. Connect the following connectors by extension Cables.

   CNCCD ↔ CN107: Cable 1
   CNSCN ↔ CN108: Cable 3
   CNLIU ↔ CN110: Cable 4
   CNS201 ↔ CN109: Cable 5
   CNPN1 ↔ CN113: Cable 6
   CNPN2 ↔ CN114: Cable 7

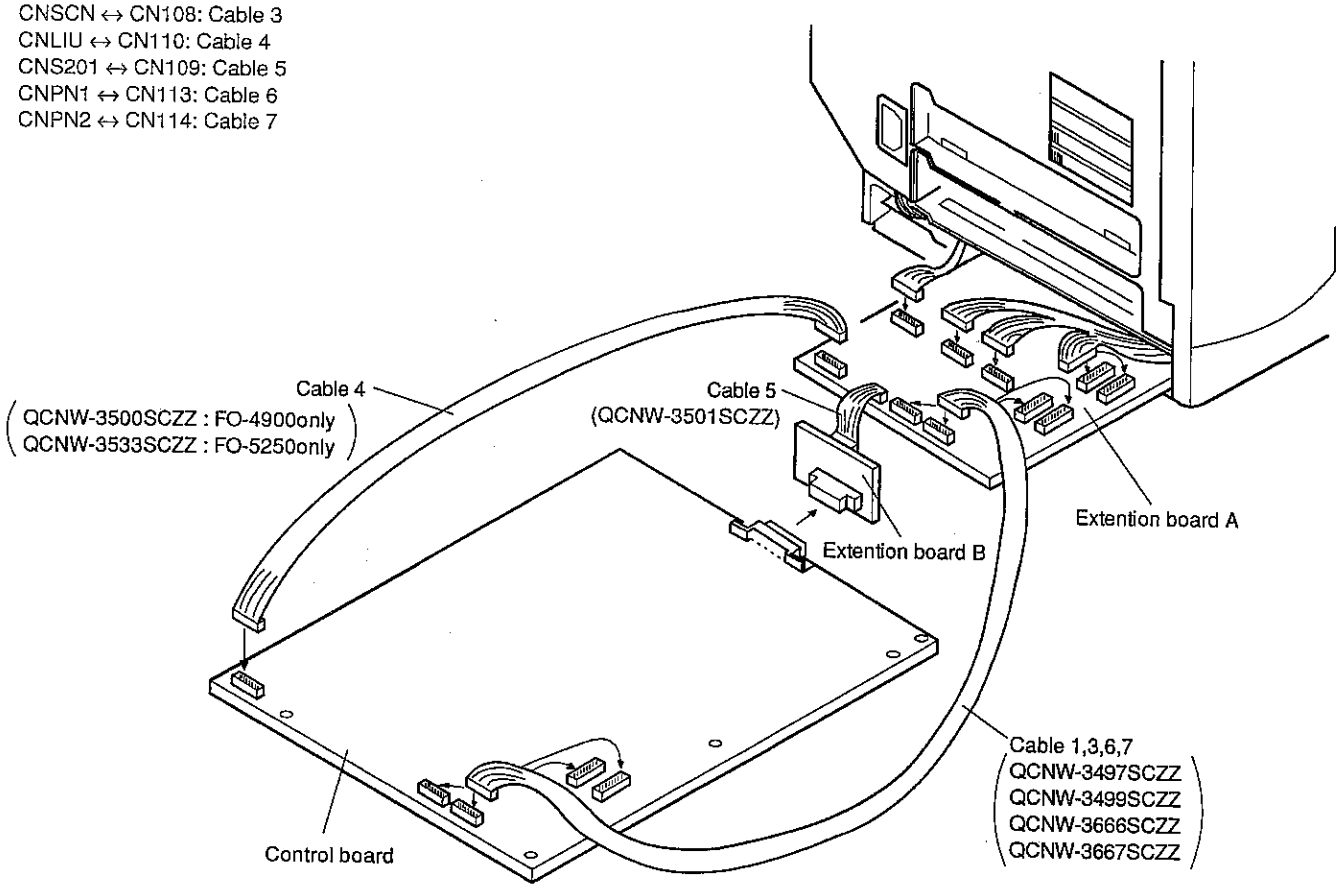


Fig.1

2. CCD adjustment plate

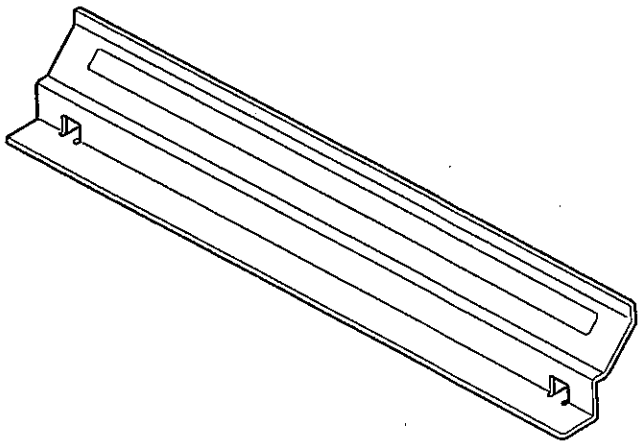


Fig. 2

CCD Adjustment Tool (UKOGM2011SCZA)

3. SCANNING LINE ADJUSTMENT IN THE MARKET

Adjust the scanning line of the optical system according to the following procedure.

(1) Remove the document tray, recording paper tray, PWB cover, document hopper, right upper cabinet, and upper cabinet. (Refer to Fig. 3)

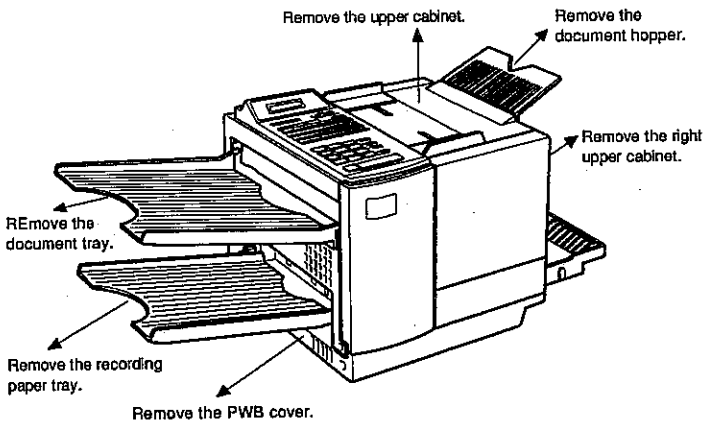

Remove the upper cabinet.
Remove the document hopper.
Remove the right upper cabinet.
REmove the document tray.
Remove the recording paper tray.
Remove the PWB cover.

Fig. 3

(2) Remove the control PWB, and attach the extension PWB. Then attach the control PWB to the extension. (Refer to Fig. 4.)

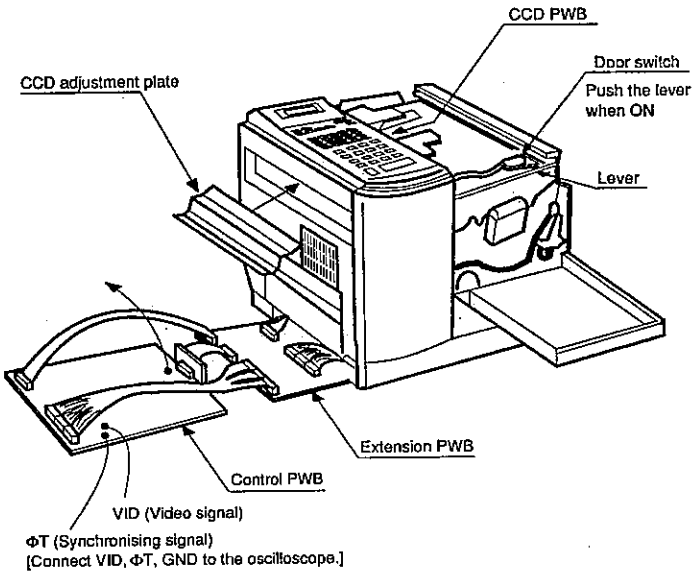
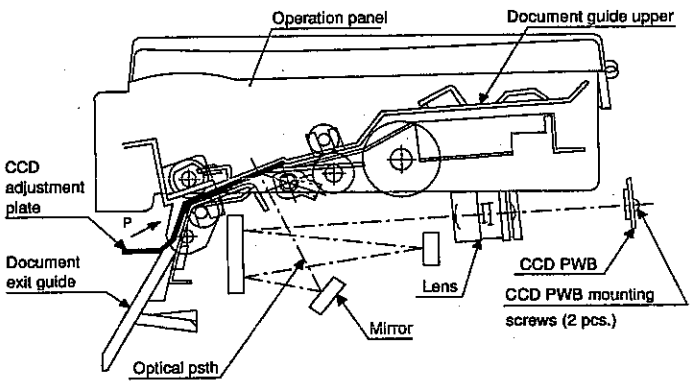


Fig. 4

(3) Turn on the power. With the door switch turned ON (fixed with adhesive tape), set to the OPT ADJUST in the diagnostic mode.

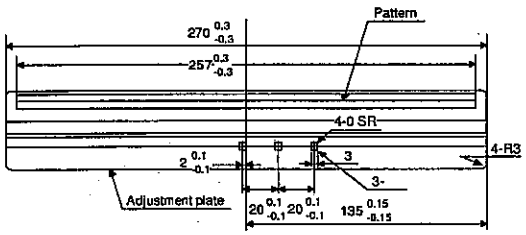
(4) With the door switch turned ON (fixed with adhesive tape), try making a copy and press the STOP key during copy operation. (The scanning light source will be kept on and CCD output will be kept delivered.)

(5) Open the operation panel, and insert the CCD adjustment plate from the document exit side to the exit guide until it makes contact with the exit guide. (Refer to Fig. 4 and Fig. 5.) Then close the panel.
(Adjust the CCD adjustment position so that the three holes of the CCD adjustment plate are aligned with paper exit guide ribs 7, 8, and 9 as shown in Fig. 6.)



[Insert the CCD adjustment plate in direction of arrow P as shown above, adjust so that the document exit guide ribs are aligned with the three holes of the adjustment plate. Push the CCDadjustment guid unitl it comes in contact with the paper exit guide.]

Fig. 5



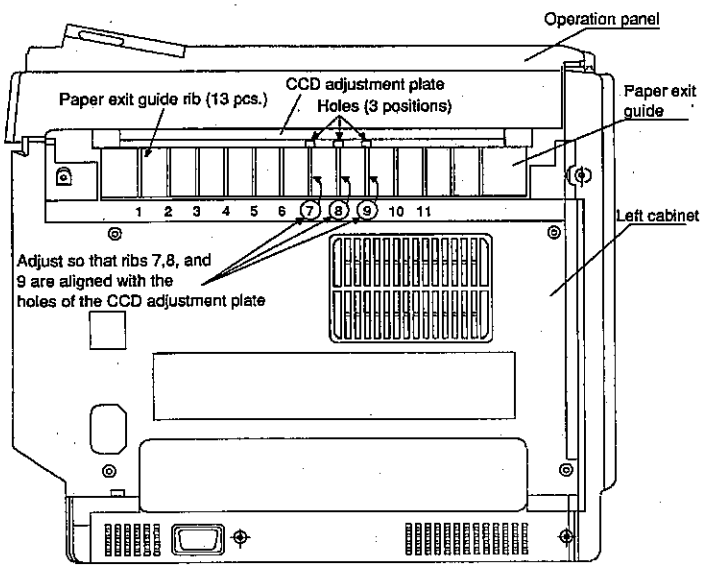

Operation panel
Paper exit guide rib (13 pcs.)
CCD adjustment plate
Holes (3 positions)
Paper exit guide
1 2 3 4 5 6 7 8 9 10 11
Left cabinet
Adjust so that ribs 7,8, and 9 are aligned with the holes of the CCD adjustment plate

Fig. 6

(6) Check VID (video) signal on the control PWB with a oscilloscope.

(7) Loosen the CCD PWB mounting screw and move the CCD PWB right and left, up and down to adjust scanning line.

(8) When this adjustment is completed, the signal shown in Fig. 7 will appear.

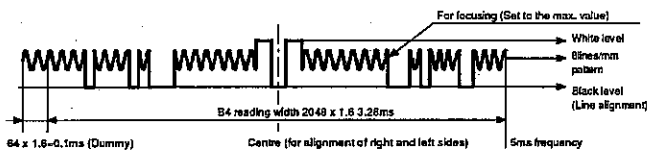
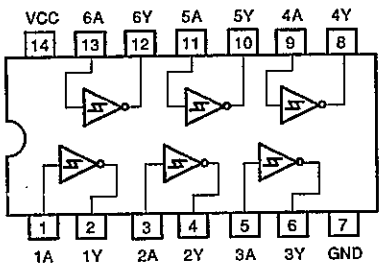

For focusing (Set to the max. value)
White level
6lines/mm pattern
Black level (Line alignment)
B4 reading width 2048 x 1.6 3.28ms
64 x 1.6=0.1ms (Dummy)
Centre (for alignment of right and left sides)
5ms frequency

Fig. 7

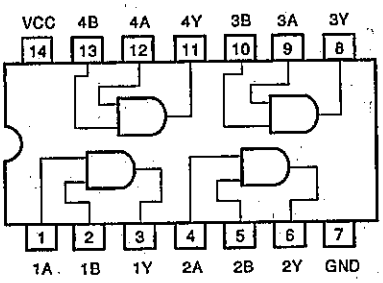
4. Key panel for printer diagnostics (parts code: CPNLC0185FCS2) (See chapter 2)

[2] IC signsl name

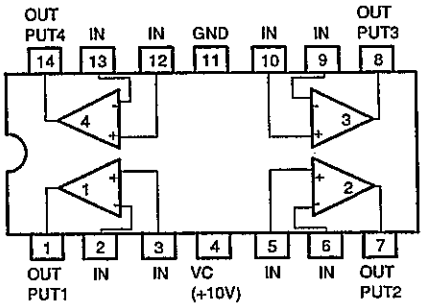
VHIMC74HC14MF



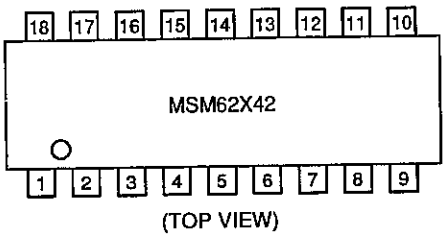
VHIMC74HC08MF



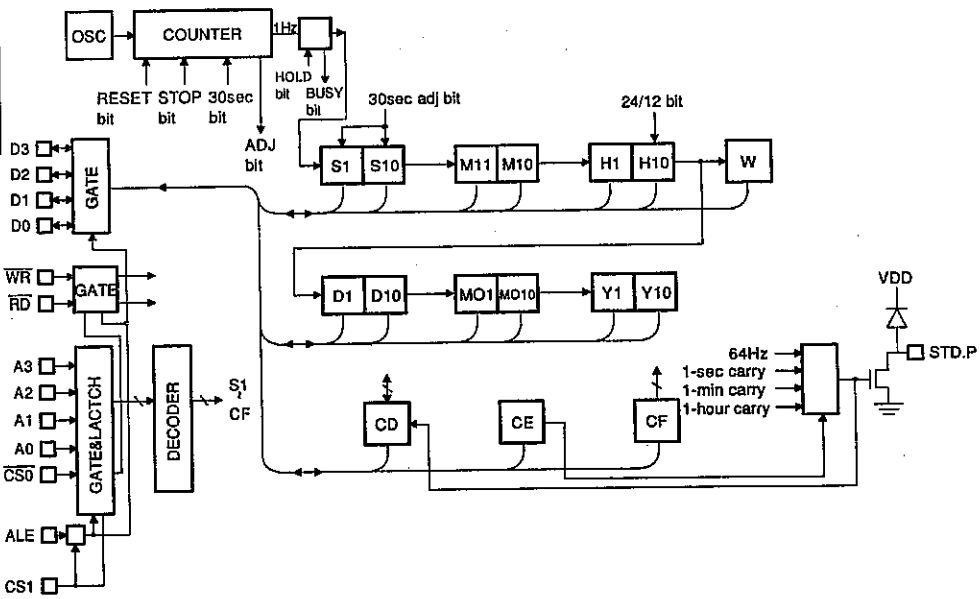
VHIMC34004M/F



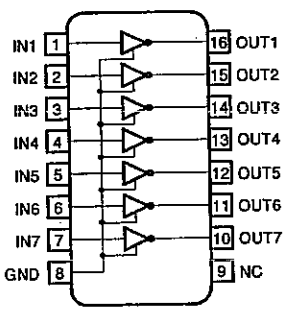
VHIMSM62X42-A

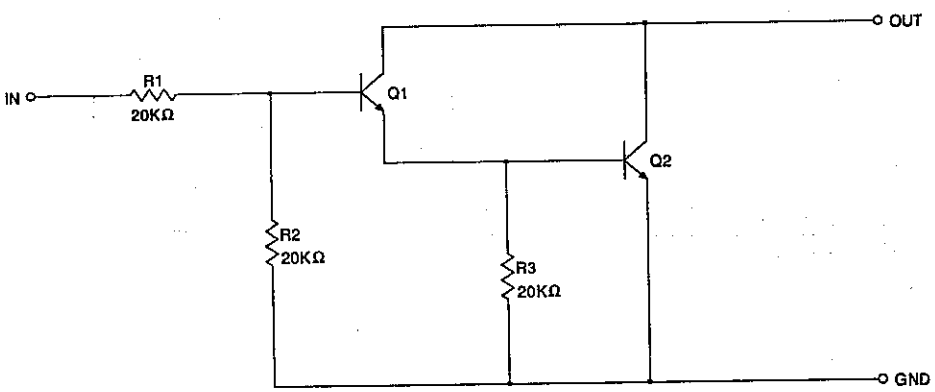


No.	Pin	No.	Pin
1	STD.P	18	VDD
2	$\overline{CS0}$	17	(VDD)
3	ALE	16	(VDD)
4	A0	15	CS1
5	A1	14	D0
6	A2	13	D1
7	A3	12	D2
8	$\overline{READ}$	11	D3
9	GND	10	$\overline{WRITE}$

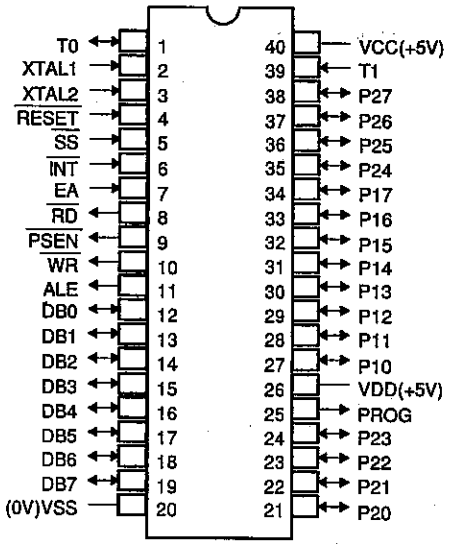


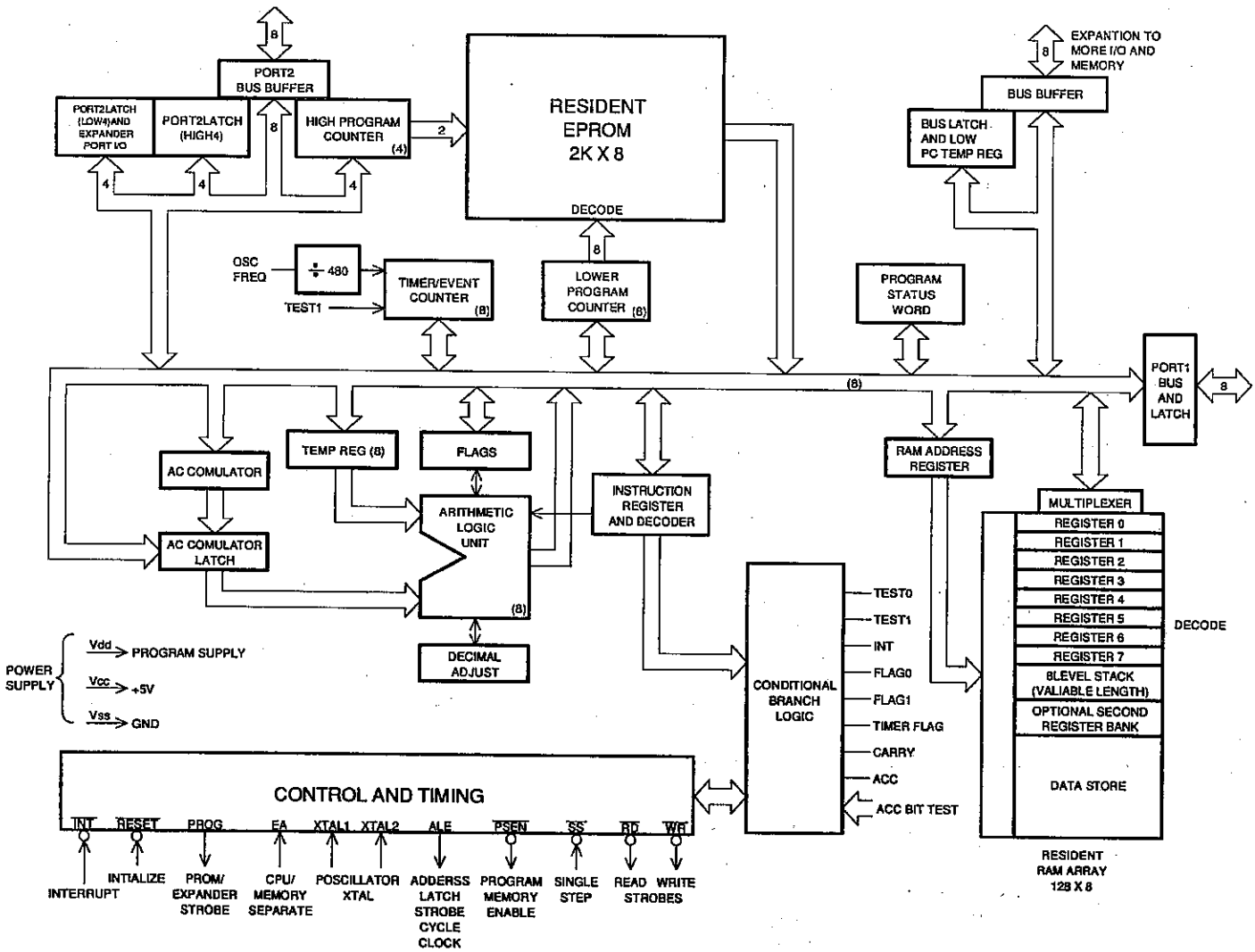
IR2403



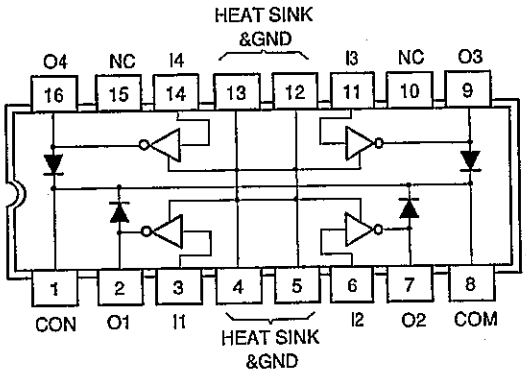


VHI8749////-1


T0 1
XTAL1 2
XTAL2 3
RESET 4
SS 5
INT 6
EA 7
RD 8
PSEN 9
WR 10
ALE 11
DB0 12
DB1 13
DB2 14
DB3 15
DB4 16
DB5 17
DB6 18
DB7 19
(0V)VSS 20
40 VCC(+5V)
39 T1
38 P27
37 P26
36 P25
35 P24
34 P17
33 P16
32 P15
31 P14
30 P13
29 P12
28 P11
27 P10
26 VDD(+5V)
25 PROG
24 P23
23 P22
22 P21
21 P20


PORT2 BUS BUFFER
PORT2LATCH (LOW4)AND EXPANDER PORT I/O
PORT2LATCH (HIGH4)
HIGH PROGRAM COUNTER (4)
RESIDENT EPROM 2K X 8
DECODE
EXPANTION TO MORE I/O AND MEMORY
BUS BUFFER
BUS LATCH AND LOW PC TEMP REG
OSC FREQ
÷ 480
TEST1
TIMER/EVENT COUNTER (8)
LOWER PROGRAM COUNTER (8)
PROGRAM STATUS WORD
PORT1 BUS AND LATCH
AC COMULATOR
AC COMULATOR LATCH
TEMP REG (8)
FLAGS
ARITHMETIC LOGIC UNIT
INSTRUCTION REGISTER AND DECODER
RAM ADDRESS REGISTER
MULTIPLEXER
REGISTER 0
REGISTER 1
REGISTER 2
REGISTER 3
REGISTER 4
REGISTER 5
REGISTER 6
REGISTER 7
8LEVEL STACK (VALIABLE LENGTH)
OPTIONAL SECOND REGISTER BANK
DATA STORE
DECODE
DECIMAL ADJUST
POWER SUPPLY
Vdd PROGRAM SUPPLY
Vcc +5V
Vss GND
CONDITIONAL BRANCH LOGIC
TEST0
TEST1
INT
FLAG0
FLAG1
TIMER FLAG
CARRY
ACC
ACC BIT TEST
CONTROL AND TIMING
INT RESET PROG EA XTAL1 XTAL2 ALE PSEN SS RD WR
INTERRUPT
INTIALIZE
PROM/ EXPANDER STROBE
CPU/ MEMORY SEPARATE
POSCILLATOR XTAL
ADDERSS LATCH STROBE CYCLE CLOCK
PROGRAM MEMORY ENABLE
SINGLE STEP
READ STROBES
WRITE STROBES
RESIDENT RAM ARRAY 128 X 8

(VHITD62064BP1)

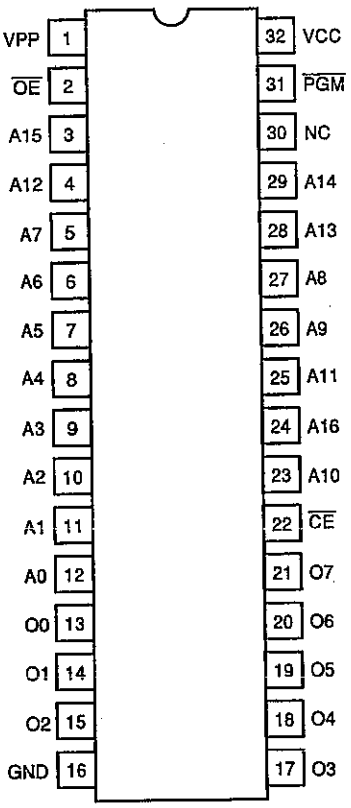


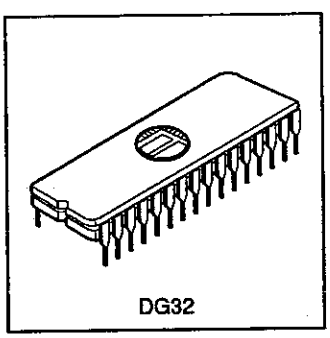
(Ta=25°C)

Item	Code	Rating	Unit
Output withstand voltage	VCE(SUS)	80	V
Output current	IOUT	1.5	A
Input current	IIN	50	mA
Input voltage	VIN	7	V
Clamp diode withstand voltage	VR	80	V
Clamp diode forward current	IF	1.5	A
GND terminal current	IGND	5.0	A
Allowable loss	PD	2.7	W
Operating temperature	Topr	-40 ~ 85	°C
Storing temperature	Tstg	-55 ~ 150	°C

HN27C301G-25

(VHIH27C301G25)

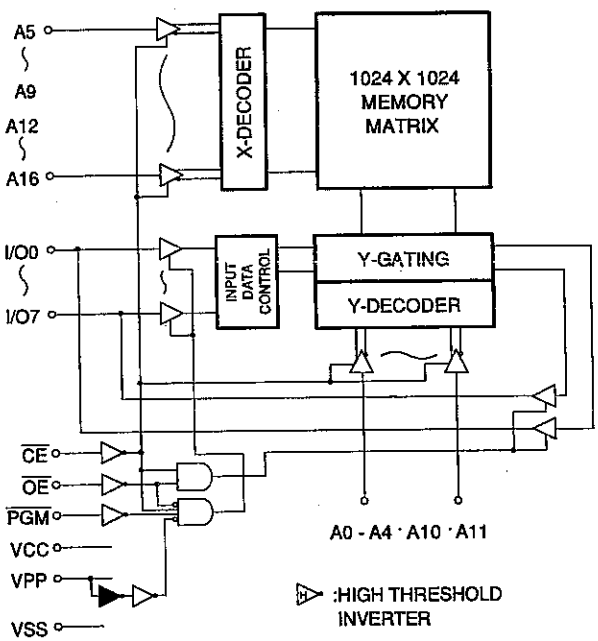




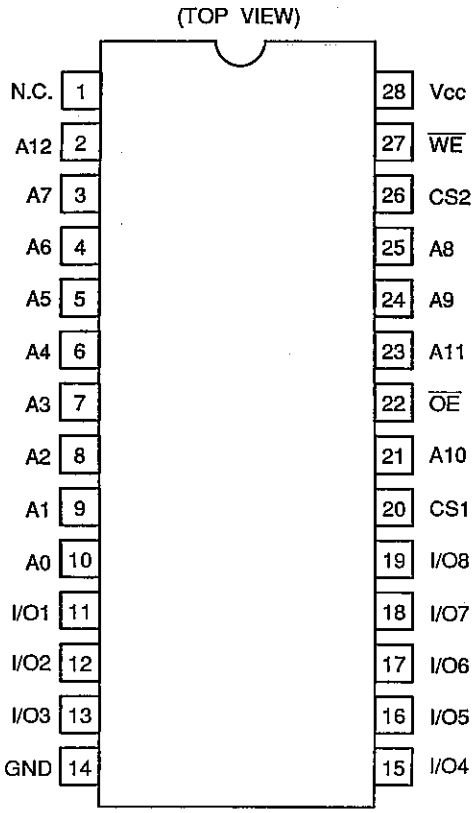
Feature

- 5V only power supply (±5%)
- Page programing ····· Programing voltage: +12.5V D.C
  High speed programing
- Stastic function ····· No clock
- Read program mode TTL compatible
- Access time ····· 250ns
- Power consumption 50mW/MHz typ. (Operation)
  5μW/typ. (Standby)
- 1M-bit Mask ROM pin compatible

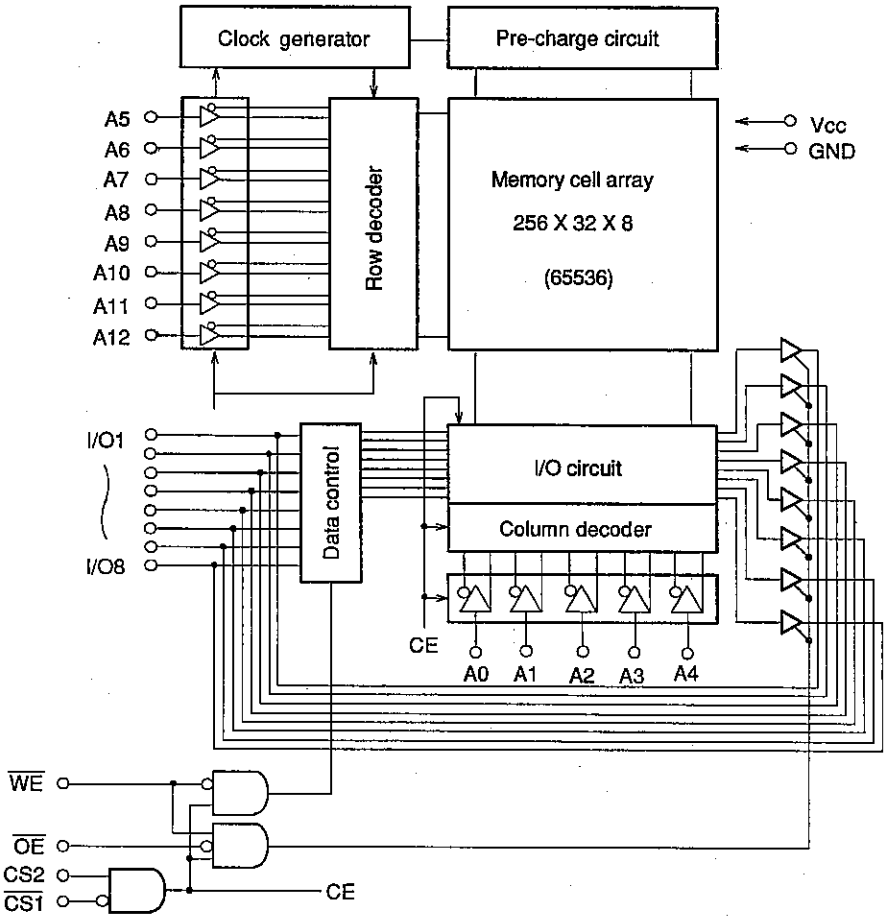
BLOCK DIAGRAM



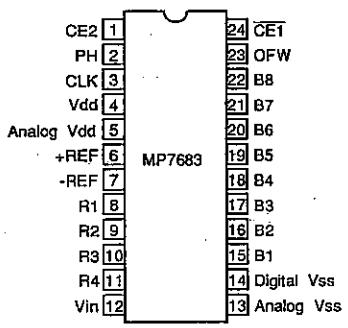
VHIHM6264LF12

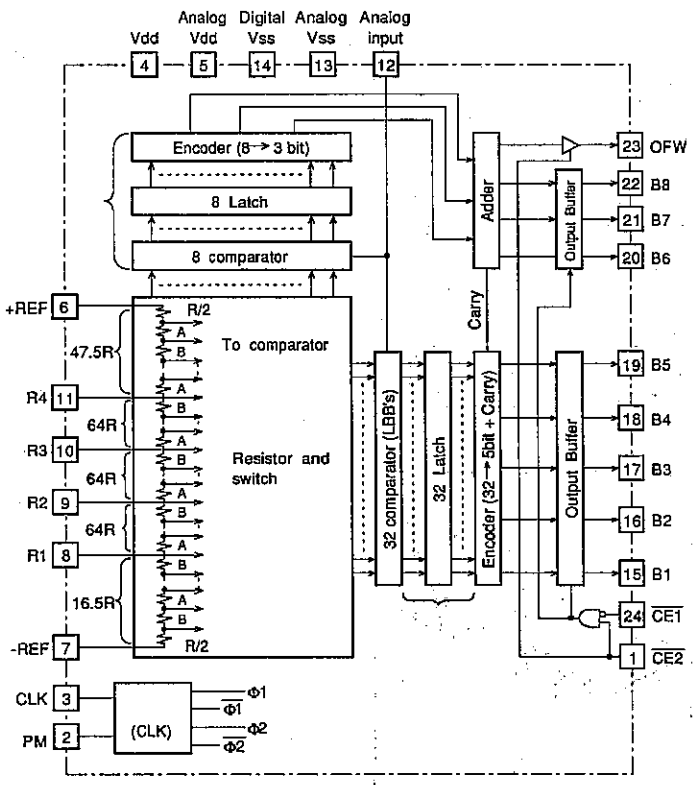


Symbol	Description
A0 ~ 12	Address input
I/O1 ~ I/O8	Data input output
$\overline{CS1}$,CS2	Chip select input
$\overline{WE}$	Write enable input
$\overline{OE}$	Output buffer control input
Vcc	5V supply
GND	GND
N.C	Not used

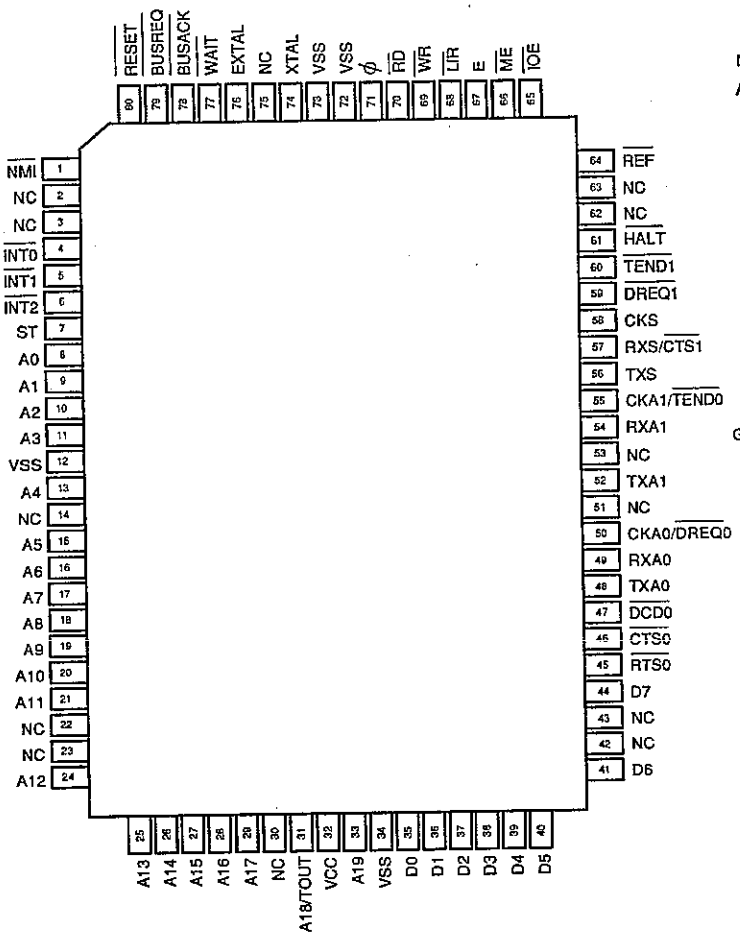


VHiMP7683/-1F

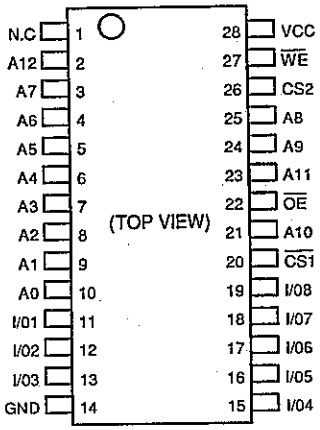




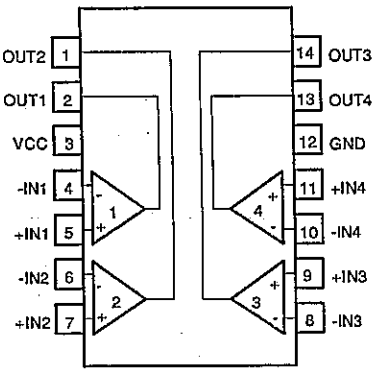
VHIHD6418ORIF



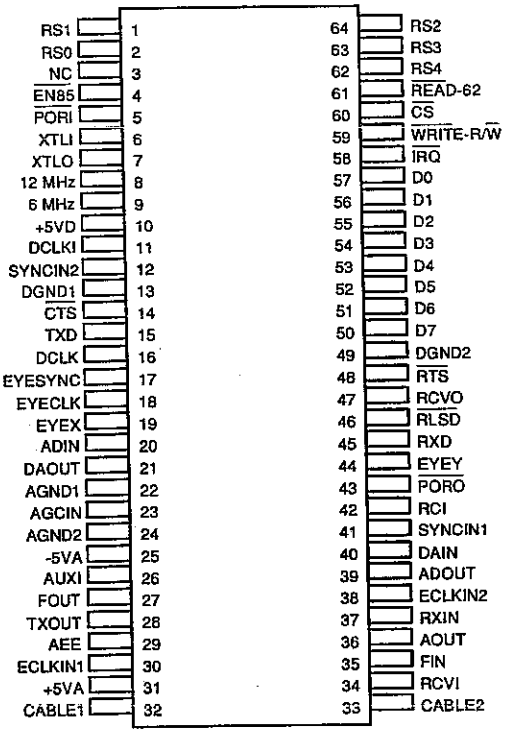
VHILH5164LN10



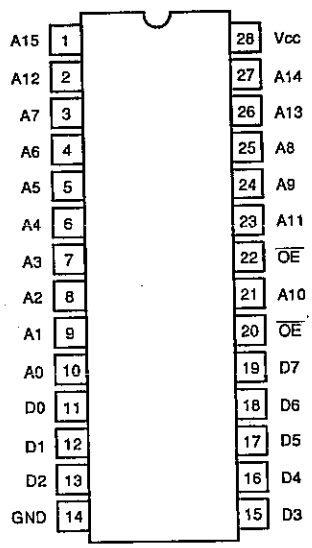
VHIBA4558F/-1



VHIR96MFX//-1

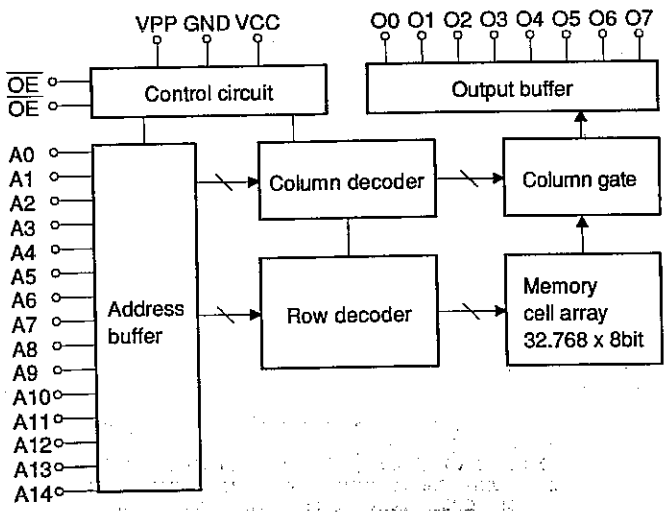


VHI27256-250I



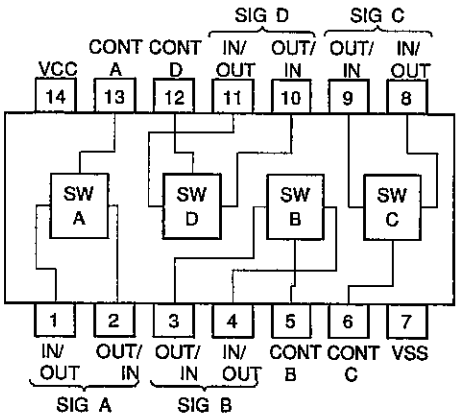
Pin description

A0~A14	Address input
O0~O7	Data output
CE	Chip enable input
OE	Output control input
VPP	Program power supply
VCC	Power supply (+5V)
GND	Ground

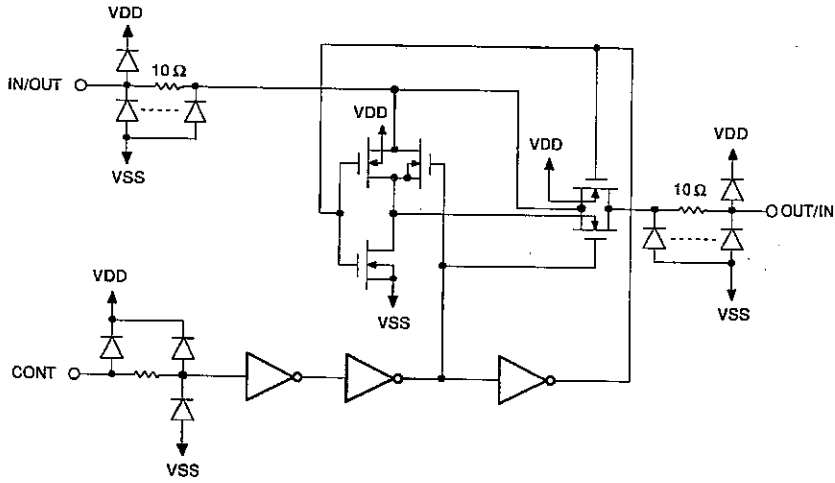


VHIMC14066BMF

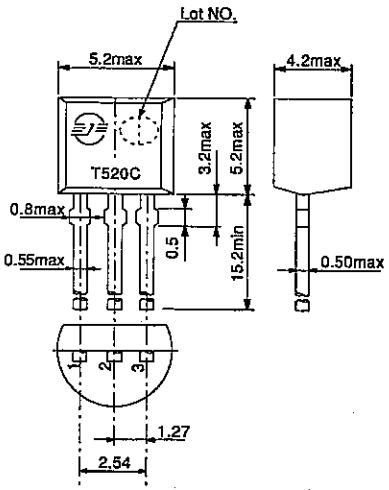
Pin Arrangement



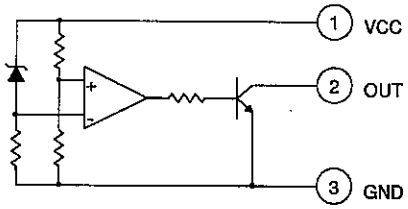
Equivalent circuit (one of the four blocks)



PST520C
(VHIPST520C-2/)

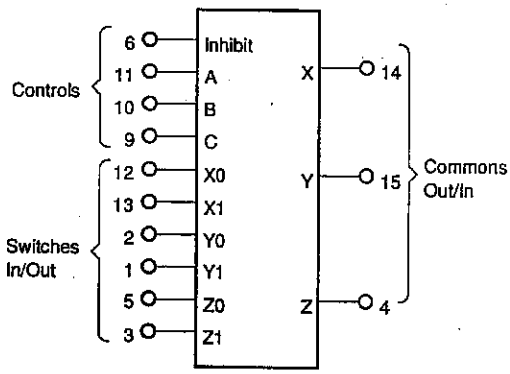


EQUIVALENT CIRCUIT



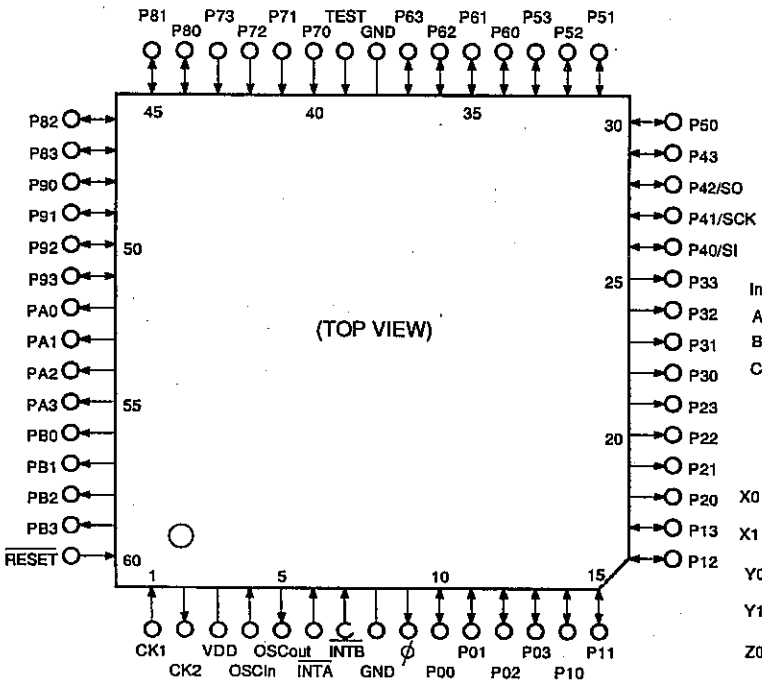
VHIMC14053BMF

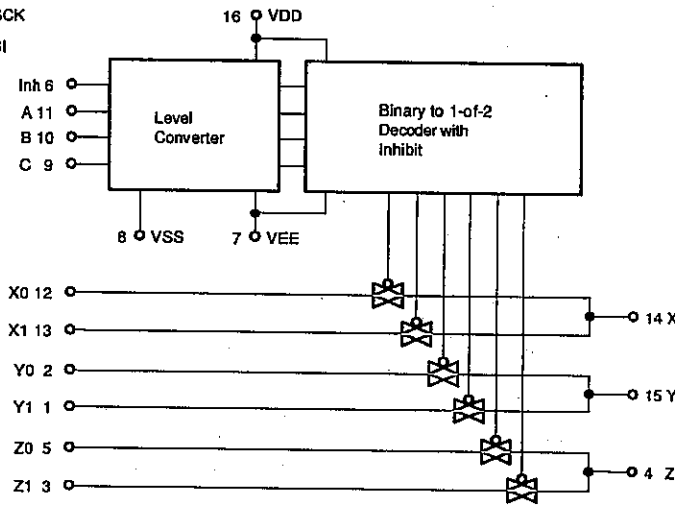
MC14053B
Triple 2-Channel Analog Multiplexer/Demultiplexer



VDD = Pin16
VSS = Pin8
VEE = Pin7

SM552





SHARP PARTS GUIDE

MODEL FO-5300

CONTENTS

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2 General

3 Left cabinet

4 Operation unit, Document guide upper

5 Document guide lower, Motor assy, Optical unit

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11 Packing material & Accessories

12 Control board

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14 PCU PWB unit

15 DC Power supply PWB unit

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Parts marked with "⚠" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

Table of destinations

SELECTION CODE	COUNTRIES
D	Germany, Switzerland, Austria
D1	Denmark, Sweden, Italy, Netherland, Spain, Portugal, Belguium, Norway, Finland

1 Exteriors,Cabinet etc.

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
13	XEPSD30P06000	AA		C	Screw (3×6)
14	LPLTP2396SCZA	AC		C	Blind plate
15	LX−WZ2023SCZZ	AA		C	Washer
16	NGERP2157SCZZ	AC		C	Pinion
17	XUSSD30P06000	AA		C	Screw (3×6)
18	LX−WZ2020SCZZ	AB		C	Washer
19	MSPRC2428SCZZ	AA		C	Hopper spring
20	NGERH2125SCZZ	AB		C	Rack gear
23	GCABA2187SCZB	AW		D	Top cabinet
24	PGiDM2304SCZZ	AD		C	Document guide (Rear)
25	PGiDM2303SCZZ	AD		C	Document guide (Front)
29	XHPSD30P06000	AA		C	Screw (3×6)
41	CCABC2189SC07	AY	N	D	Right cabinet (Include №72~76)
48	LX−BZ0376FCZZ	AA		C	Screw (ST3×8)
49	TCAUS6668RCZZ	AA		D	Caution label
50	GCABF2192SCZA	AU		C	Rear cabinet
51	XBPSE30P08XS0	AA		C	Screw (3×8XS)
53	XHBSE30P12000	AA		C	Screw (3×12)
55	GCABE2191SCZZ	AL		C	Top cabinet (Right)
57	GCABB2185SCZE	AU		D	Front cabinet (Lower)
58	XHBSE30P10000	AA		C	Screw (3×10)
59	CCABA2186SC02	AS		D	Front cabinet (Upper)
62	XRESP25−04000	AA		C	E type ring (2.5mm)
63	LANGT2724SCZZ	AF		C	Holding angle(for front cabinet)
64	MSPRC2427SCZZ	AA		C	Hinge spring
65	NSFTZ2231SCZZ	AD		C	Hinge shaft
66	XEPSD30P06000	AA		C	Screw (3×6)
67	LPLTM2489SCZZ	AK		C	Jointed plate,front cabinet upper
72	GCOVA2283SCZZ	AV		C	Liberation cover
73	LPLTM0953FCZZ	AA		C	Magnet plate
74	PMAG−0021FCZZ	AF		C	Magnet catch
75	TLABZ2972SCZZ	AC		D	Line label
76	LX−BZ2145SCZZ	AA		C	Screw (3×5)
77	LHLDW2020SCZZ	AB		C	Holder (K−103G)
81	TCAUS0003GCZZ	AB		D	Caution 2
82	TLABH2215FCZZ	AC		C	Laser class 1 label G
83	QCNW−3821SCZZ	AD		C	SCAN earth wire
84	TLABH2231FCZZ	AC		D	Class 1 label E
85	TLABG2921SCZZ	AB		D	Class 1 label

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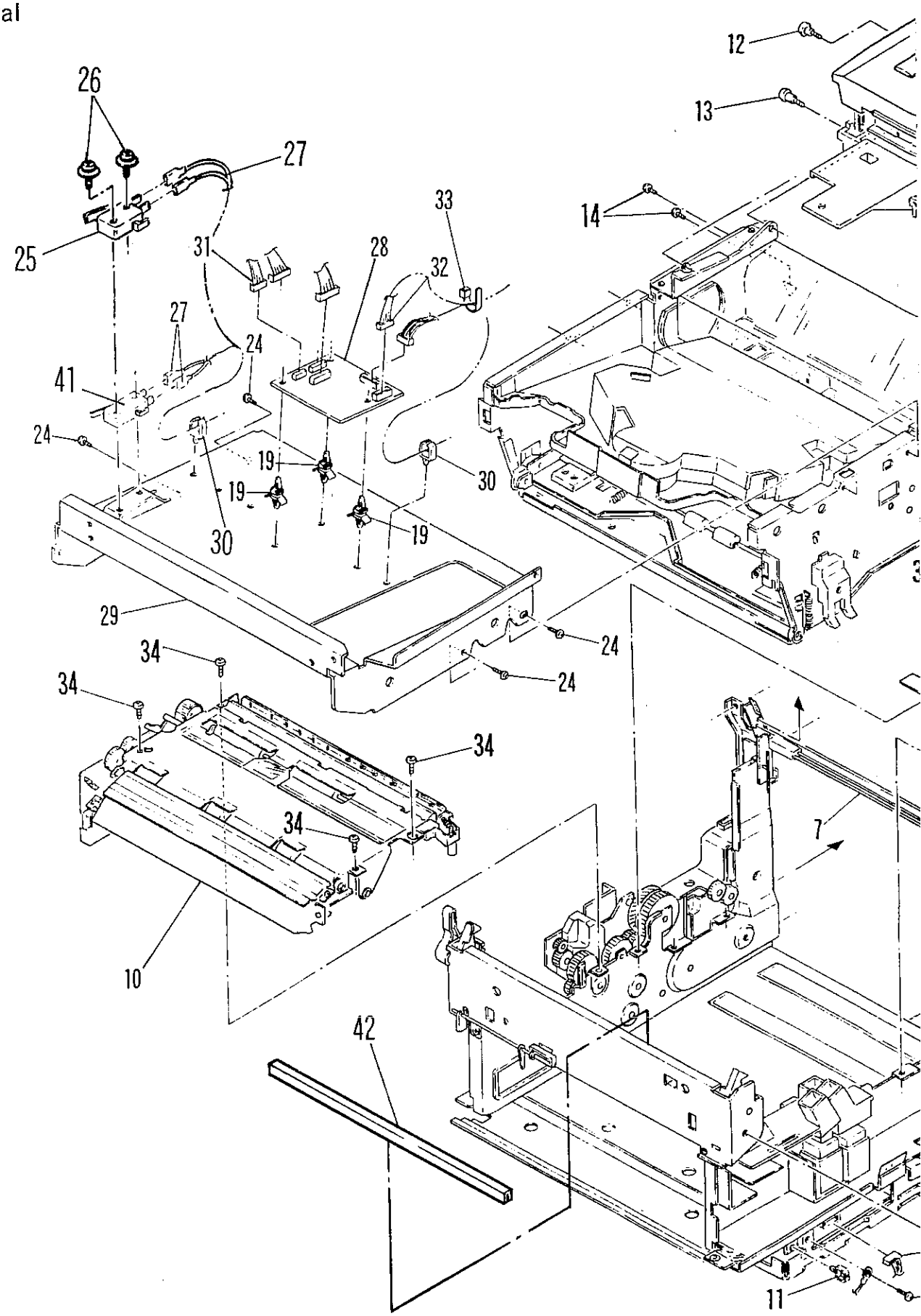
2 General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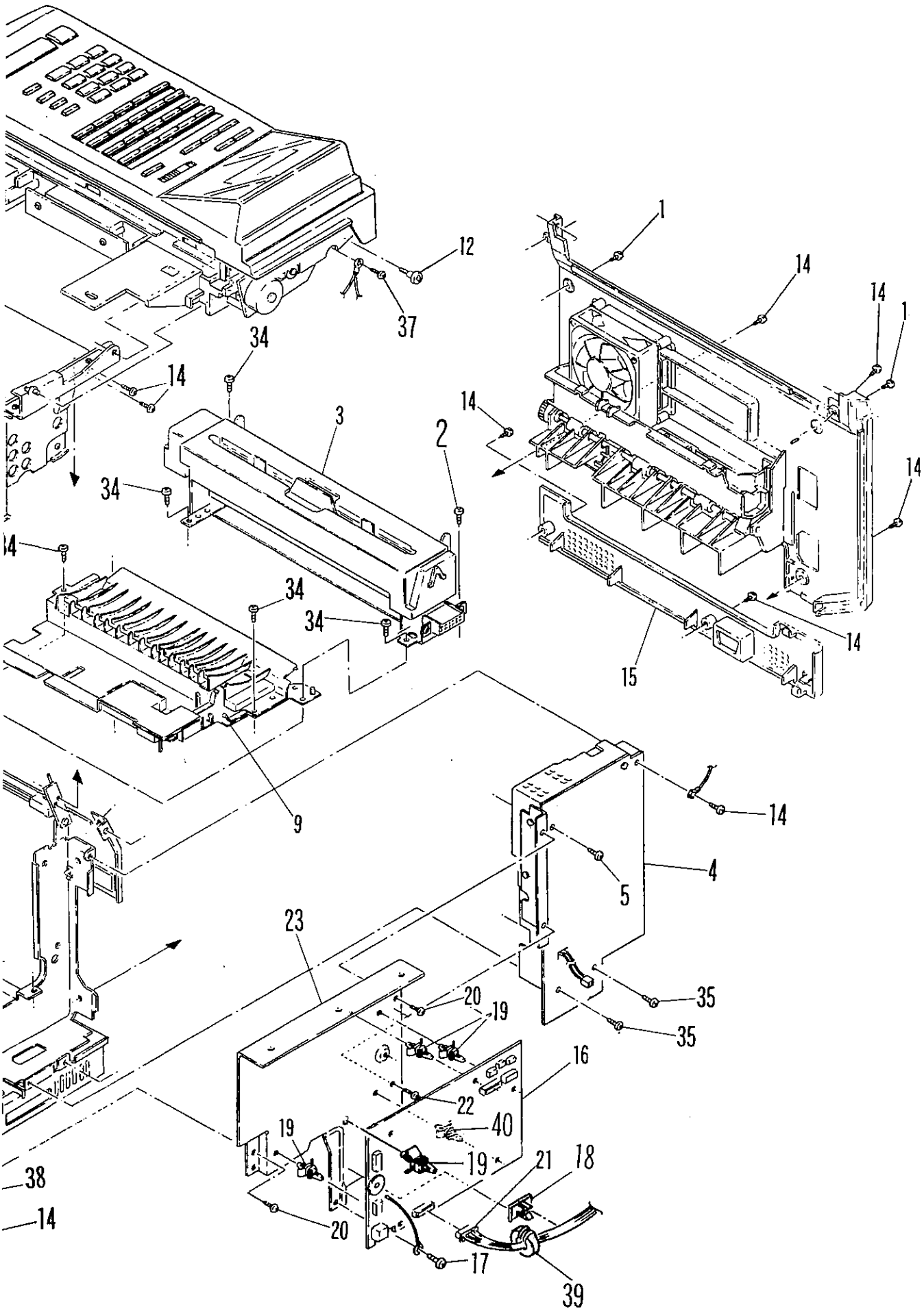
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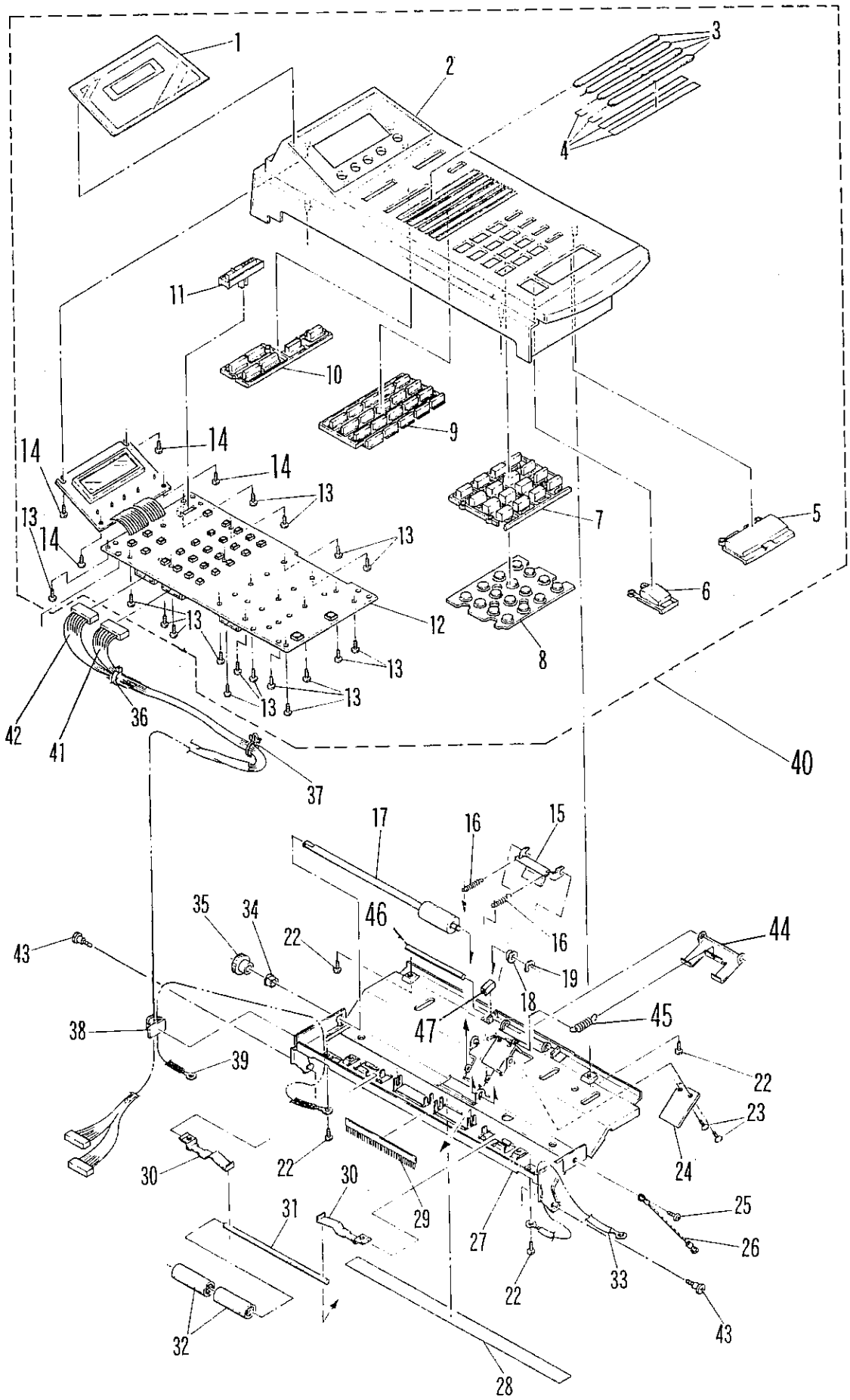
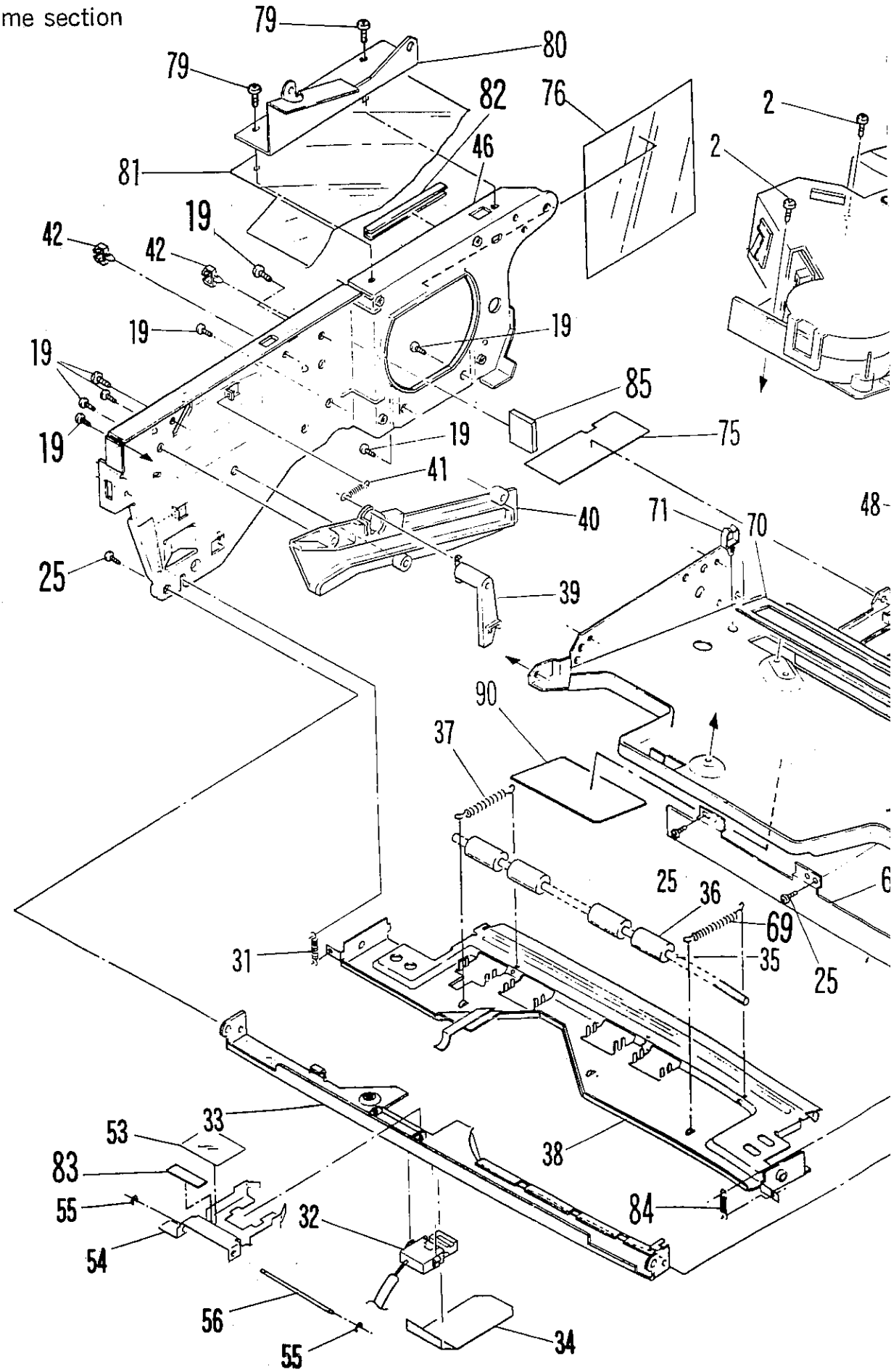
[4] Operation unit,Document guide upper

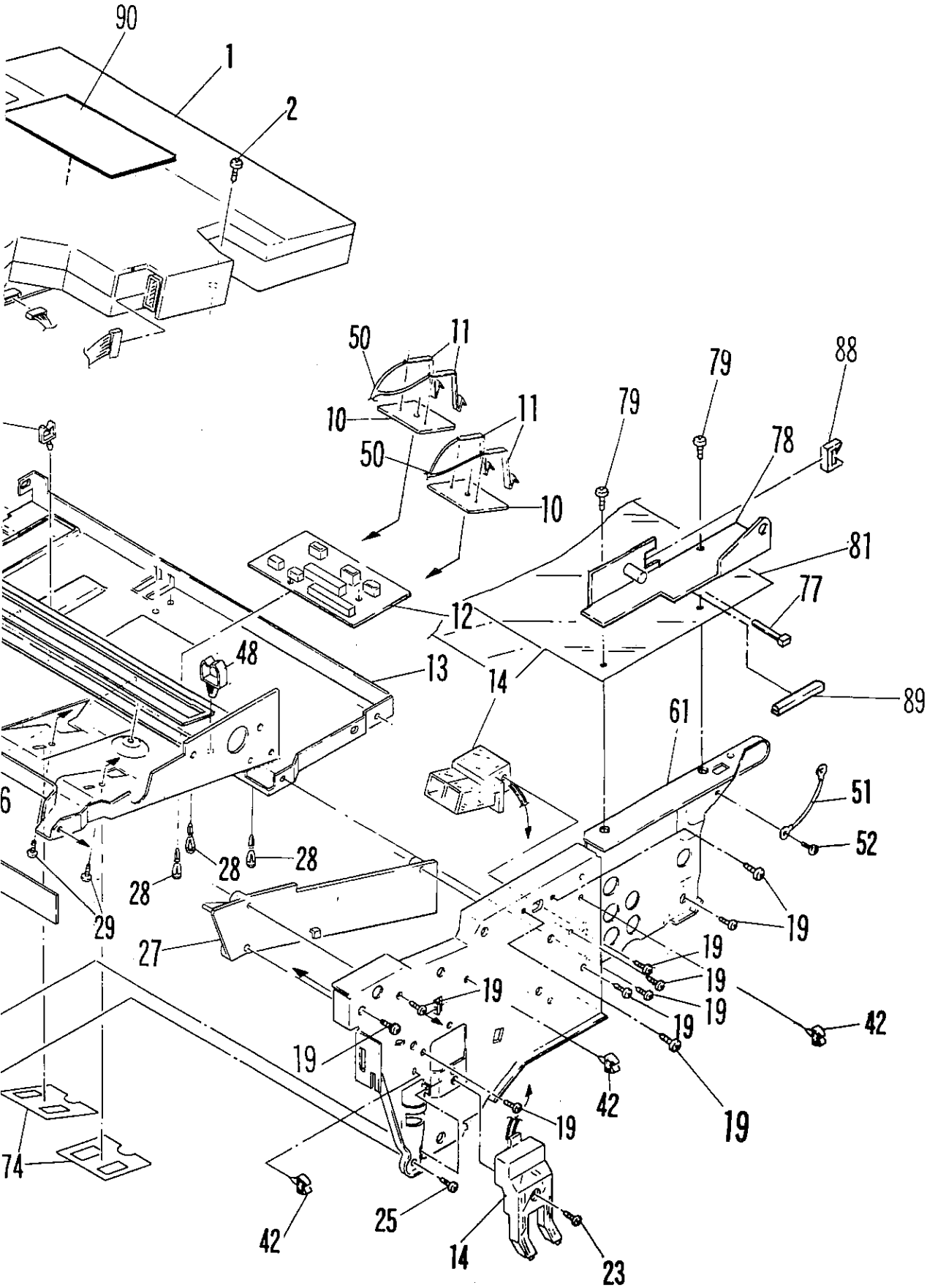


4 Operation unit,Document guide upper

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	0EMTE1907300 2	AQ		C	Name plate (HTE0190−730020) [D]
	0EMTE1907300 3	AQ		C	Name plate (HTE0190−73−0030) [D1]
2	0EMTE1907050 2	BD		D	Case (HTE0190−705020) [D]
	0EMTE1907050 3	BD	N	D	Case (HTE0190−705030) [D1]
3	0EMTE1907400 1	AC		C	Plate (HTE0190−740010)
4	0EMTE1907500 1	AC		D	Label (HTE0190−750010)
5	0EMTE1854000 1	AQ		C	Key top(Start) (HTE0185−40−0010)
6	0EMTE1858400 1	AK		C	Key top(Stop) (HTE0185−84−0010)
7	0EMTE0887100 3	AN		C	Key top(ten key) (HTE0088−71−0030)
8	0EMTE0887500 1	AR		C	Rubber (HTE0088−75−0010)
9	0EMTE1887300 3	AP		C	Direct key (HTE0188−73−0030)
10	0EMTE1857100 1	AG		C	Key top(function key) (HTE0185−71−0010)
11	0EMTE1887500 2	AD		C	Slide SW·lever (HTE0188−75−0020)
12	0EMTE1900300 2	BP		E	SW·PWB−U (HTE0190−030020)
13	0EMKE2512206 1	AA		C	Screw (2×6)(HKE2512−20−0601)
14	0EMTG0333000 1	AA		C	Screw (2×5)(HTG0033−30−0010)
15	LPLTM2543SCZZ	AE		C	Separater
16	MSPRT2481SCZZ	AA		C	Separater spring
17	NRŌLR2234SCZZ	AL		C	Transfer roller 1
18	NBRGY2080SCZA	AB		C	Bearing 1
19	XRESJ40−06000	AA		C	E type ring (4mm)
22	XEPSD30P08000	AA		C	Screw (3×8)
23	LX−BZ2155SCZZ	AB		C	Screw
24	LPLTG2449SCZZ	AD		C	Separater rubber plate
25	LX−BZ0376FCZZ	AA		C	Screw (ST3×8)
26	PWiR−2015SCZZ	AC		C	Wire
27	PGiDH2347SCZZ	AW		C	Document guide (Upper)
28	PTPEZ2036SCZZ	AC		C	Tape
29	PBRS−2019SCZZ	AF		C	Brush,electrostatic discharger
30	MSPRP2403SCZZ	AB		C	Pinch spring
31	NSFTZ2238SCZZ	AD		C	Pinch roller shaft 2
32	NRŌLP2194XHZZ	AC		C	Pinch roller 1
33	QCNW−3515SCZZ	AE		C	Earth wire 1,Document guide upper
34	NBRGY2079SCZA	AB		C	Bearing 2 (28Z)
35	NGERH2177SCZZ	AC		C	Transfer gear 1
36	LBNDJ2006SCZZ	AA		C	Cable clamp (GT−100M)
37	LBNDJ0043FCZZ	AA		C	Band (SG130)
38	LHLDW2020SCZZ	AB		C	Holder
39	QCNW−3708SCZZ	AD		C	Earth cable
40	DPNLC2034SCZA	BU	N	E	Operation unit [D] (Include No.1～14
	DPNLC2034SCZB	BU	N	E	Operation unit [D1] (Include No.1～14
41	QCNW−3655SCZZ	AP		C	Panel cable B (14pin)
42	QCNW−3654SCZZ	AN		C	Panel cable A (12pin)
43	LX−BZ2088SCZZ	AB		C	Screw (3×8KS)
44	LPLTM2562SCZZ	AD		C	Pressure plate
45	MSPRT2499SCZZ	AA		C	Pressure spring
46	NSFTZ2239SCZZ	AC		C	Pressure plate shaft
47	PHŌG−2066SC15	AA		C	Edging (L15)

6 Upper-frame section

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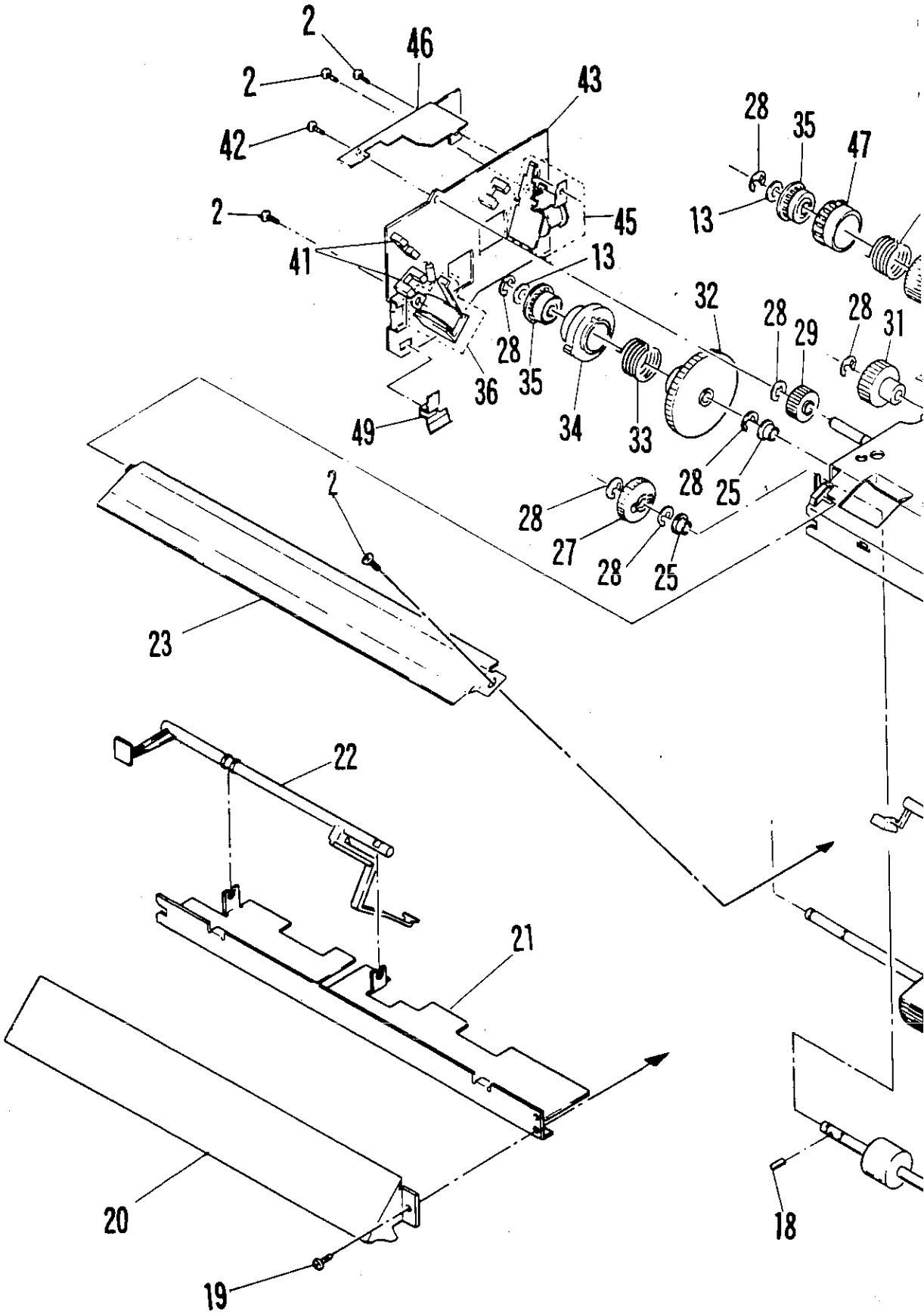
6 Upper-frame section

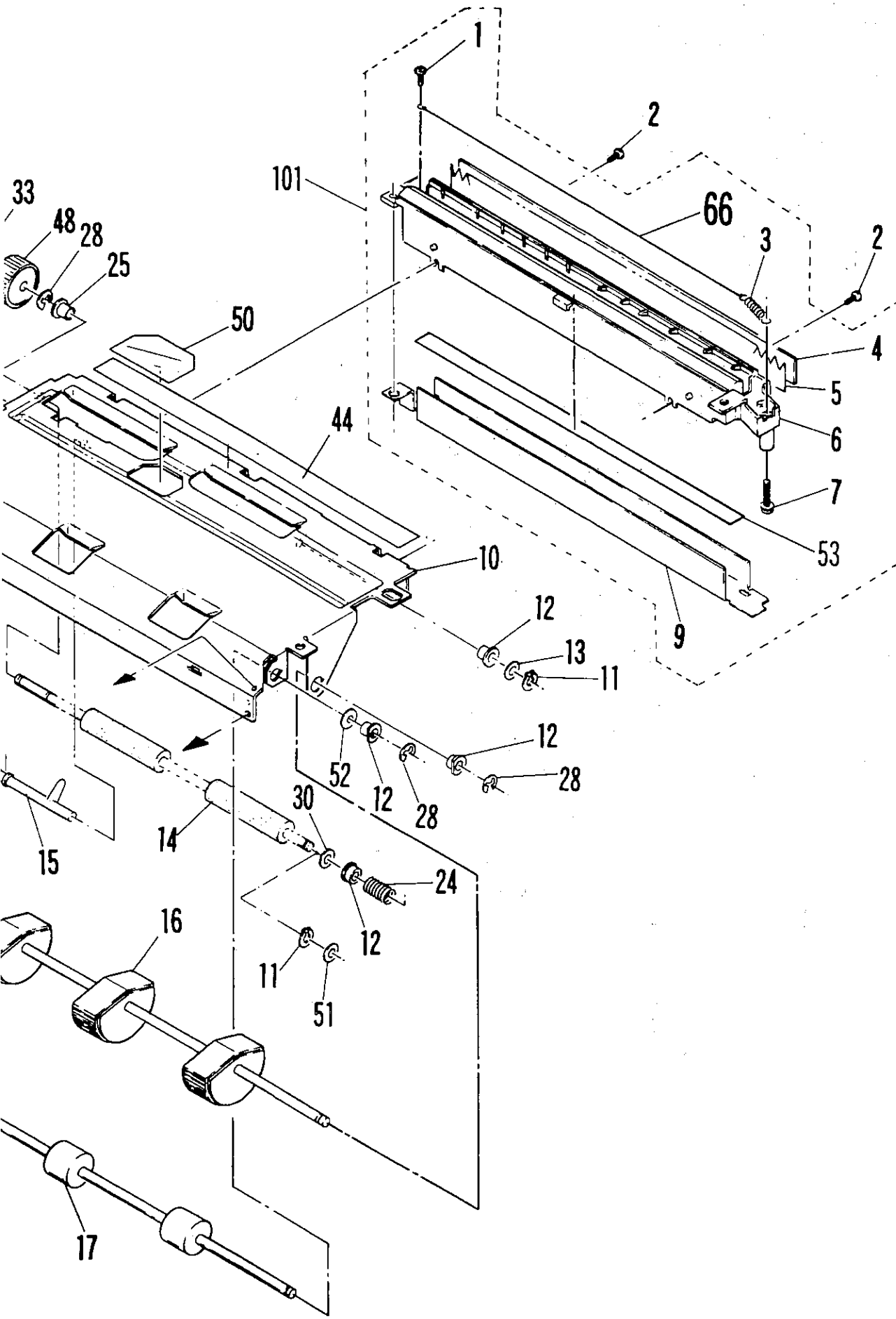
NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	DUNTK4979SCZZ	CF		E	Optical unit
2	XHPSE40P10000	AA		C	Screw (4×10)
10	LHLDZ0948FCZZ	AB		C	Terminal holder
11	QSLP-0127FCZ1	AC		C	Fuse terminal
12	CPWBF2338SC02	AV		E	Division PWB unit
13	CDAiU0359FC01	AW		C	Optical stand
14	CCOVP0948FC31	AR		C	MC•G terminal cover unit
19	XEBSD30P08000	AA		C	Screw (3×8)
23	XHPSD30P12000	AA		C	Screw (3×12)
25	LX-BZ0376FCZZ	AA		C	Screw (ST3×8)
27	PGiDM1056FCZ2	AD		C	Cartridge guide (R)
28	PSPAN1007ACZZ	AB		C	PWB spacer
29	XEPSD30P06000	AA		C	Screw (3×6)
31	MSPRT1503FCZ1	AA		C	Tension spring L (L)
32	QSW-Z0409FCZZ	AR		B	Tonner sensor N
33	CGiDH1058FC01	AM		C	Paper guide C
34	PSHEP2299FCZZ	AB		C	Sensor sheet
35	NSFTZ1205FCZ1	AF		C	PS shaft
36	NROLP0686FCZ1	AB		C	PS roller
37	MSPRT1708FCZZ	AA		C	PS spring A
38	CGiDH1057FC01	AN		C	Paper guide B
39	LSTPP0209FCZZ	AB		C	Cartridge stopper
40	PGiDM1055FCZZ	AC		C	Cartridge guide (L)
41	MSPRC1499FCZZ	AA		C	Stopper spring
42	LHLDW1009ACZZ	AA		C	Cable holder
46	LFRM-0551FCSZ	AR		C	Upper frame (L)
48	LHLDW0734FCZZ	AA		C	Cable holder
50	DHAi-1678FCZZ	AD		C	Fuse harness
51	DHAi-1675FCZZ	AB		C	Joint harness
52	XBPBZ40P06K00	AA		C	Screw (4×6K)
53	PSHEP2443FCZZ	AB		C	Sensor sheet B
54	LPLTM3437FCZZ	AF		C	Sensor plate
55	XRESP20-04000	AA		C	E type ring (2mm)
56	NSFTZ1480FCZZ	AB		C	Sensor shaft
61	CFRM-0552FCG1	AR		C	Upper frame (R)
66	LPLTM3520FCZZ	AG		C	Plate
69	MSPRT1709FCZZ	AA		C	PS spring B
70	PMLT-0791FCZZ	AB		C	Optical unit cushion
71	LHLDW1006FCZZ	AA		C	Wire clamp
74	PSHEP2561FCZZ	AC		C	Terminal guide sheet
75	PSHEZ2518SCZZ	AC		C	Windbreak sheet C
76	PSHEZ2517SCZA	AD		C	Windbreak sheet B
77	LBNDJ0043FCZZ	AA		C	Band (SG130)
78	LPLTM2508SCZZ	AH		C	Scanner holding plate (Rear)
79	XHPSD30P06000	AA		C	Screw (3×6)
80	LPLTM2494SCZZ	AG		C	Scanner holding plate (Front)
81	PSHEZ2543SCZZ	AL		C	Windbreak sheet A
82	PHOG-2066SC75	AC		C	Protector (75mm)
83	PSHEP2607FCZZ	AB		C	Tonner stopper sheet
84	MSPRT1504FCZZ	AA		C	Tension spring (R)
85	PMLT-0796FCZZ	AC		C	Optical unit cushion L
88	LHLDW0595FCZZ	AC		C	Eadge bush
89	LBSHC7004SCZZ	AB		C	Edging
90	TCAUS0003GCZZ	AB		D	Caution 2

7 Main frame section

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	CSPRB1502FCS1	AW		C	Torsion spring
2	XEBSD30P08000	AA		C	Screw (3×8)
3	XBPSD30P14000	AA		C	Screw (3×14)
4	XEBSE30P08000	AA		C	Screw (3×8)
5	LHLDZ0918FCZZ	AE		C	DR holder R
6	XHBSD30P18000	AA		C	Screw (3×18)
7	XEBSD30P08000	AA		C	Screw (3×8)
8	XNESD30−24000	AA		C	Nut (3NS)
9	TCAUH0839FCZZ	AA		D	Caution label
10	LHLDW0734FCZZ	AA		C	Cable holder
11	PSPAK2331RCZZ	AA		C	Spacer (KGRS−6R)
14	CCOVP0947FC51	AN		C	High tension cover ass'y
16	CPWBF0772FC31	BL		E	DC power supply PWB unit
17	GLEGG0040FCZZ	AB		D	Rubber foot
18	CPWBF0774FC31	BM		E	High tension PWB unit
19	XHBSD30P06000	AA		C	Screw (3×6)
20	XWHSD40−08100	AA		C	Washer (4M)
21	XHBSE30P06000	AA		C	Screw (3×6)
22	CBOX−0065FC01	AW		C	PWB box
23	CPWBF0773FC31	AW		E	Mother board unit
24	LDAiU0358FCZZ	AT		C	PWB frame stand
25	LX−BZ2139SCZZ	AA		C	Screw
27	LFRM−0550FCZZ	AR		C	Lower frame R
28	XBBSD30P04000	AA		C	Screw (3×4)
29	NROLP0729FCZZ	AB		C	DSD roller
30	MSPRP1592FCZZ	AD		C	DSD spring R
31	CPLTM2496SC02	AU		C	Lock plate ass'y
32	MSPRP1497FCZZ	AD		C	DSD spring L
33	MSPRC1783FCZZ	AA		C	Spring
34	NROLP0591FCZZ	AA		C	PF−B pressure roller
35	XRESP60−07000	AA		C	E type ring (6mm)
36	MSPRC1496FCZZ	AA		C	Lock plate spring
37	MLEVP0465FCZZ	AC		C	Pinch lever
38	PTME−0188FCZZ	AL		C	Lock pawl
39	PRNGP0025FCZZ	AA		C	Ring (GTW−5)
40	LX−WZ5002BCZZ	AA		C	Washer
41	NGERH0595FCZZ	AC		C	Gear (52T)
42	CFRM−0548FC01	AW		C	Lower frame L
43	NGERH0594FCZZ	AC		C	Gear (26/52)
44	XRESP50−06000	AA		C	E type ring (5mm)
45	NGERH0590FCZZ	AD		C	Gear (17/96)
46	NGERH0591FCZZ	AD		C	Gear (17/50)
48	NGERH0597FCZZ	AC		C	Pulley gear (53/22T)
49	NGERH0592FCZZ	AC		C	Gear (20/28)
50	NBLTH0118FCZZ	AD		C	DV timing belt
51	NGERH0598FCZZ	AB		C	Pulley gear (21/22T)
52	LX−RZ1044HCZZ	AA		C	Washer (φ4)
53	NGERH0606FCZZ	AC		C	Gear (16T)
54	XBPSD30P06KS0	AA		C	Screw (3×6KS)
55	QEARP0036FCZZ	AC		C	DR earth plate
56	LHLDZ0917FCZ1	AE		C	DR holder L
57	CPLTM3193FCS1	AL		C	Sub plate
58	NGERH0593FCZ1	AB		C	Gear (26T)
59	NGERH0596FCZZ	AD		C	Gear (34/34)
61	CMOTN0565FC31	BF		E	Main motor unit
62	NBLTH0117FCZZ	AD		C	MM timing belt
63	NGERH0589FCZZ	AC		C	Pulley gear (23/30)
64	NGERH0599FCZZ	AB		C	Gear (18)
65	XRESP40−06000	AA		C	E type ring (4mm)
66	NPLYZ0174FCZZ	AB		C	MM pulley (20M×L)
67	CHLDZ0919FC51	AK		C	High tension PWB holder
68	DHAi−1612FCZZ	AS		C	Main harness
70	PHOG−2062SCZZ	AC		C	Eadge
72	LBSHC0095FCZZ	AB		C	Bushing (CE−012)
73	PCOVP0970FCSZ	AF		C	MM cover
74	LBNDJ2003SCZZ	AA		C	Band,wire
75	LHLDF2120SCZZ	AA		C	Cable holder (MPS−04−0)
76	LHLDW0595FCZZ	AC		C	Eadge bush
79	PCAPH0032FCZZ	AC		C	Connector cap (9pin)
80	PSHEP2566FCZZ	AD		C	Lock plate sheet B
82	PSHEP2581FCZZ	AF		C	Sheet L
83	PSHEP2582FCZZ	AD		C	Sheet R
84	PSHEP2597FCZZ	AC		C	Lock plate sheet C
85	PSHEP2535FCZZ	AC		C	Frame base plate sheet
86	LBSHZ2049SCZZ	AC		C	Square bushing
87	LPLTM2493SCZZ	AE		C	Sub plate
88	XHPSD30P06000	AA		C	Screw (3×6)
89	CPWBX2492SC32	CV	N	E	Control board (without ROM)
90	CPWBS2348SC08	BS	N	E	PCU PWB unit
91	LANGT2728SCZZ	AF		C	Cont. PWB angle

8 Paper feeding unit

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8 Paper feeding unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	XEPSD30P05000	AA		C	Screw (3×5)
2	XHBSD40P06000	AA		C	Screw (4×6)
3	MSPRC1506FCZZ	AA		C	TC spring
4	PGiDM1063FCZ1	AE		C	Separator guide
5	PSHEZ2450FCZZ	AH		C	Separator sheet
6	PCASZ0184FCZZ	AF		C	TC case A
7	XEPSN30P20000	AA		C	Screw (3×20)
9	PCASZ0185FCZZ	AG		C	TC case B
10	CGiDH1059FC01	AQ		E	Paper guide unit
11	PRNGP0025FCZZ	AA		C	Ring (GTW-5)
12	NBRGP0266FCZZ	AA		C	Bearing (ϕ5)
13	LX-WZ2019SCZZ	AA		C	Washer (5.2×12×0.25)
	LX-WZ5028BCZZ	AA		C	Washer (5.2×10×0.5)
14	NROLP0689FCZZ	AN		C	PS roller
15	MLEVP0467FCZZ	AC		C	PS lever
16	NROLP0687FCZZ	AS		C	PF roller A
17	NROLP0688FCZZ	AP		C	PF roller B
18	LPiNS0133FCZZ	AA		C	Pin (2×10)
19	XHBSD30P08000	AA		C	Screw (3×8)
20	PGiDM1061FCZZ	AG		C	U turn guide A
21	PGiDH1060FCZZ	AG		C	Paper guide A2
22	MLEVP0466FCZZ	AD		C	PO lever A
23	PGiDH1062FCZZ	AG		C	U turn guide B
24	MSPRC1695FCZZ	AB		C	PS brake spring
25	NBRGC0311FCZZ	AC		C	M5 bearing metal
27	NGERH0600FCZZ	AB		C	Gear 24 (24T)
28	XRESP40-06000	AA		C	E type ring (4mm)
29	NGERH0601FCZZ	AB		C	Gear (18T)
30	XWHUW50-08120	AA		C	Washer (5mm)
31	NGERH0603FCZZ	AB		C	Gear (23T)
32	NGERH0602FCZZ	AF		C	Gear (54T)
33	MSPRC1580FCZZ	AD		C	Clutch spring
34	PPiPP0121FCZZ	AC		C	CL sleeve
35	LBOSZ1031FCZZ	AC		C	Clutch boss
36	RPLU-0229FCZZ	AN		B	PF solenoid
41	VHPGP1S53//-1	AF		B	Photo transistor (GP1S53)
42	XBPSD30P06000	AA		C	Screw (3×6)
43	CPWBF0778FC31	AY		E	Solenoid PWB unit
44	PSHEP2555FCZZ	AE		C	TC guide sheet
45	RPLU-0230FCZZ	AP		B	PS solenoid
46	PCOVP0977FCZZ	AE		C	PWB cover
47	PPiPP0108FCZ1	AB		C	Clutch sleeve
48	NGERH0604FCZZ	AE		C	Gear 30 (30T)
49	LPLTM3525FCZZ	AB		C	PWB earth plate
50	PSHEP2350FCZZ	AB		C	PS sheet
51	LX-WZ0269FCZZ	AC		C	Washer
52	LX-WZ1003HCZZ	AA		C	Washer (8×12×0.5)
53	PSHEP2448FCZZ	AC		C	Sheet
66	DWiR-0466CSZZ	BG		C	Wire
101	CCASZ0184FC31	AP		C	TC case A
	(Unit)				
901	CGiDH1059FC31	BN		E	Paper feeding unit

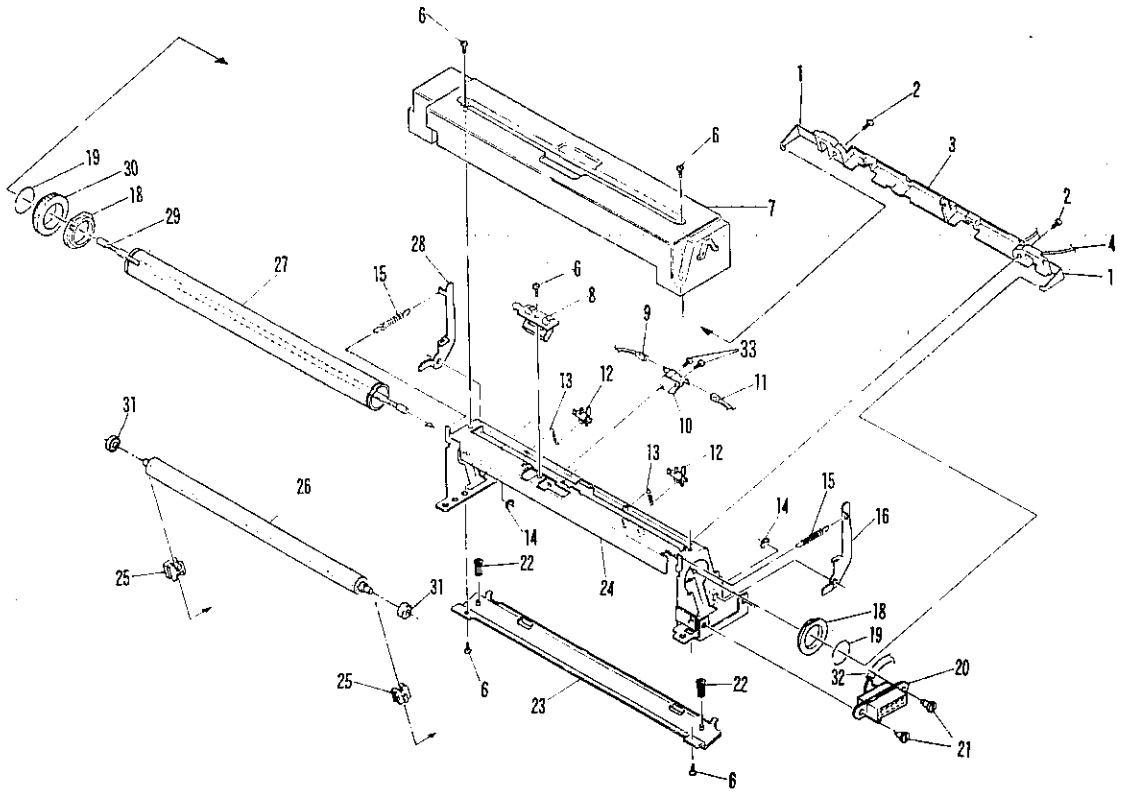
9 Fusing section

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	MSPRP1510FCZZ	AD		C	Lamp spring
2	XHPSD30P08000	AA		C	Screw (3×8)(for Heat sink) (3×8)
3	PCOVP0946FCZ1	AF		C	Stand cover
4	DHAi-1626FCZZ	AA		C	Fusing harness C
6	XHPSD30P06000	AA		C	Screw (3×6)
7	CCOVQ0907FC02	AP		C	Heater cover
8	CDTCT0075FC01	AR		E	Thermistor unit
9	DHAi-1606FCZZ	AC		C	Fusing harness B
10	CTHM-0011FC01	AK		B	Thermostat
11	DHAi-1605FCZZ	AC		C	Fusing harness A
12	PTME-0191FCZZ	AF		C	Separator pawl
13	MSPRC1512FCZZ	AA		C	Separator pawl spring
14	XRESP40-06000	AA		C	E type ring (4mm)
15	MSPRC1581FCZZ	AB		C	Release lever spring
16	MLEVF0494FCZZ	AD		C	Pressure release lever R
18	NBRGP0259FCZZ	AE		C	Fusing bearing
19	LSTPP0116FCZZ	AA		C	Roller stopper
20	QCNCM0333FCZZ	AD		C	Connector
21	LX-BZ0487FCZZ	AA		C	Screw
22	MSPRC1511FCZZ	AA		C	Pressure roller spring
23	LPLTM3040FCZZ	AD		C	Under plate
24	LPLTM3039FCZZ	AK		C	Base plate
25	NBRGP0331FCZ1	AD		C	Pressure bearing
26	NROLi0692FCZ1	AV		C	Pressure roller
27	NROLT0693FCZZ	AW		C	Heat roller
28	MLEVF0469FCZZ	AD		C	Pressure release lever
29	RLMPU0408FCZZ	AX		B	Lamp (220/240V)
30	NGERH0401FCZZ	AC		C	Fusing gear
31	NBRGP0386FCZZ	AK		C	Pressure roller bearing
32	PTUBG0089FCZZ	AA		C	Glass tube
33	XHPSD30P04000	AA		C	Screw (3×4)
	(Unit)				
901	DUNTW6244FC15	BN		E	Fusing unit (220V)

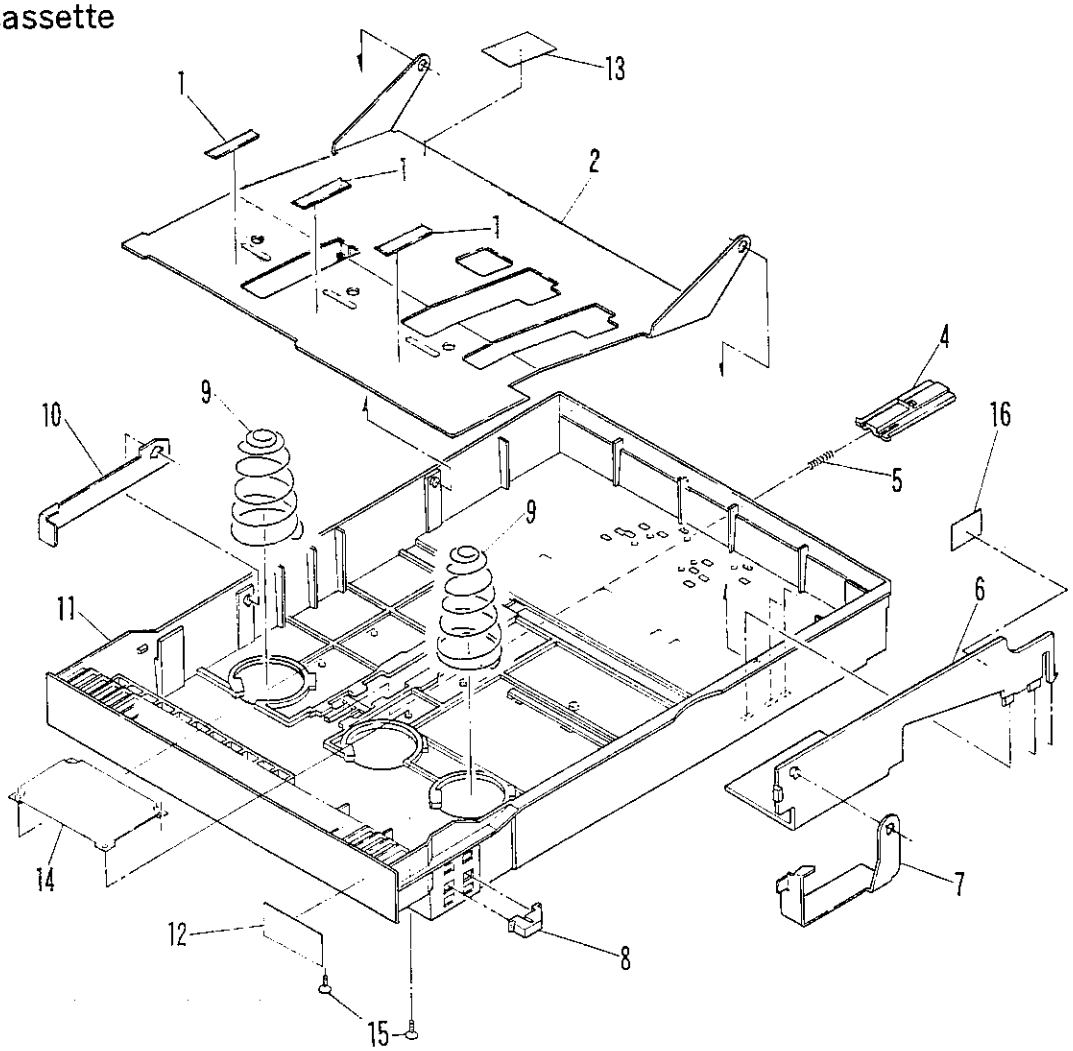
10 Paper cassette

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	PSHEZ0053GCZZ	AA		C	Cassette sheet N
2	LPLTM3036FCZ1	AM		C	Cassette turning plate
4	LSTPP0161FCZZ	AB		C	Turning plate stopper
5	MSPRC1145FCZZ	AA		C	Stopper spring
6	LPLTP3035FCZZ	AF		C	Cassette plate
7	PTME-0189FCZZ	AF		C	Cassette pawl R
8	LDAiU0428FCZZ	AB		C	Paper size detecting stand
9	MSPRC1505FCZZ	AC		C	Cassette spring
10	PTME-0190FCZZ	AE		C	Cassette pawl L
11	GCASP0145FCZZ	AQ		D	Cassette
12	TLABZ2393FCZZ	AA		D	Cassette size label (A4)
13	TLABH2400FCZZ	AB		D	Cassette label
14	LPLTM3543FCZZ	AD		C	Cassette plate
15	XHSSE30P06000	AA		C	Screw (3×6)
16	TLABZ2544FCZZ	AB		D	Paper limit label

9 Fusing section

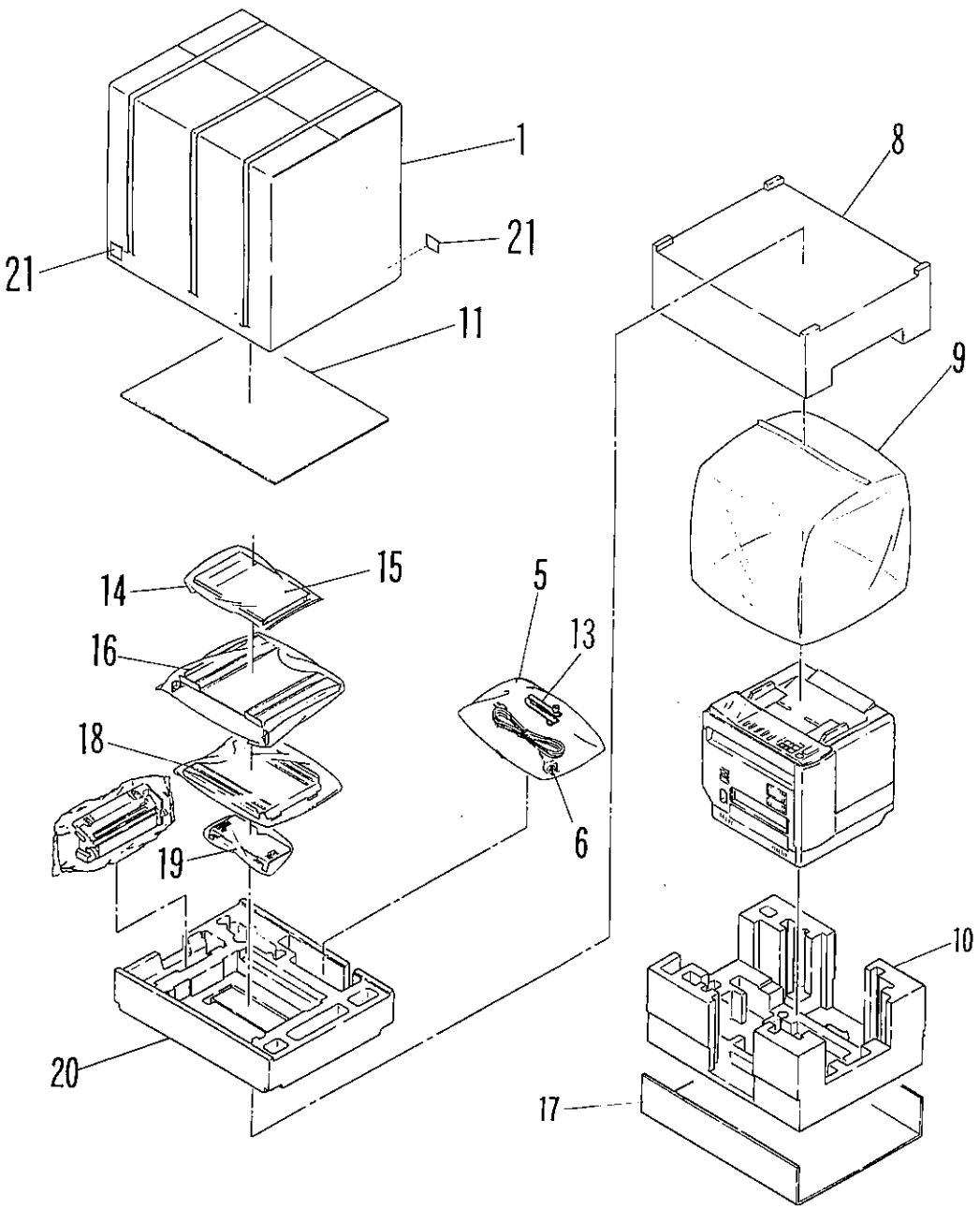


10 Paper cassette



11 Packing material & Accessories

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	SPAKC3290SCZZ	AV	N	D	Packing case
5	SSAKA3001CCZZ	AA		D	Vinyl bag (140×360mm)
⚠6	QACCV6621QCZZ	AT		B	AC cord (250V 10A)
8	SPAKA3304SCZA	AR		D	Packing add (Upper)
9	SPAKP2827SCZZ	AL		D	Vinyl cover
10	SPAKA3303SCZZ	AS		D	Bottom add
11	SPAKA3098SCZZ	AE		D	Add B
13	CCLEZ0106FC01	AE		C	Charger cleaner
14	SSAKA0003HCZZ	AA		D	Vinyl bag (240×360mm)
15	TiNSG3055SCZZ	AY	N	D	Instruction book [D]
	TiNSE3056SCZZ	AY	N	D	Instruction book [D1]
	PSHEZ2493SCZZ	AK		C	Carrier sheet (A4)
16	LPLTP2490SCZZ	AS		C	Document tray
17	SPAKA3100SCZZ	AG		D	Bottom cardboard
18	LPLTP2491SCZA	AN		C	Tray,reco.paper
19	PHOP-2062SCZA	AG		C	Document hopper
20	SPAKA3097SCZZ	AT		D	Add A
21	TLABM2498SCZZ	AD		D	Destination label [D]
	TLABM2484SCZZ	AE		D	Destination label [D1]
101	UBNDA1008CCZZ	AA		C	AC cord band (120mm)
102	LPLTP2545SCZA	AE		C	Plate(for register) [D]
	LPLTP2545SCZZ	AE		C	Plate(for register) [D1]



12 Control board

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	UBATN2010SCZZ	AN		B	Battery (CR2354−1HF)	[BAT]
2	RALMB2008SCZZ	AG		B	Buzzer	[BZ1]
3	VCQYNU1HM102J	AA		C	Capacitor (50WV 1000PF)	[C1]
4	VCQYNU1HM102J	AA		C	Capacitor (50WV 1000PF)	[C2]
5	VCEAEU1EW106M	AA		C	Capacitor (25WV 10μF)	[C3]
6	VCEAEU1HW105M	AA		C	Capacitor (50WV 1.0μF)	[C4]
7	VCEAEU1CW226M	AA		C	Capacitor (16WV 22μF)	[C6]
8	VCEAEU1CW226M	AA		C	Capacitor (16WV 22μF)	[C7]
9	VCEAEU1CW226M	AA		C	Capacitor (16WV 22μF)	[C8]
10	VCQYNU1HM102K	AA		C	Capacitor (50WV 0.001μF)	[C9]
11	VCCCTV1HH300J	AA		C	Capacitor (50WV 30PF)	[C10]
12	VCCCTV1HH300J	AA		C	Capacitor (50WV 30PF)	[C11]
13	VCCCTV1HH300J	AA		C	Capacitor (50WV 30PF)	[C12]
14	VCKYTQ1EF334Z	AB		C	Capacitor (25WV 0.33μF)	[C13]
15	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C14]
16	VCCCTV1HH300J	AA		C	Capacitor (50WV 30PF)	[C15]
17	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C16]
18	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C17]
19	VCKYTQ1EF334Z	AB		C	Capacitor (25WV 0.33μF)	[C18]
20	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C19]
21	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C20]
22	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C21]
23	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C22]
24	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C23]
25	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C24]
26	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C25]
27	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C33]
28	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C34]
29	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C35]
30	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C36]
31	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C37]
32	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C38]
33	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C42]
34	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C43]
35	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C44]
36	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C45]
37	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C46]
38	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C47]
39	VCCCTV1HH101J	AA		C	Capacitor (50WV 100PF)	[C49]
40	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C50]
41	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C51]
42	VCSAPJ1CE226M	AF		C	Capacitor (16WV 22μF)	[C52]
43	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C54]
44	VCCCTV1HH101J	AA		C	Capacitor (50WV 100PF)	[C55]
45	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C56]
46	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C57]
47	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C58]
48	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C59]
49	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C60]
50	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C61]
51	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C62]
52	VCKYTV1HF103Z	AA		C	Capacitor (50WV 0.010μF)	[C63]
53	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C64]
54	VCSAPJ1EE106M	AF		C	Capacitor (25WV 10μF)	[C65]
55	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C66]
56	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C67]
57	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C68]
58	VCKYTV1HB222K	AA		C	Capacitor (50WV 2200PF)	[C69]
59	VCKYTV1HB222K	AA		C	Capacitor (50WV 2200PF)	[C70]
60	VCKYTV1HB222K	AA		C	Capacitor (50WV 2200PF)	[C72]
61	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C73]
62	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C74]
63	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C75]
64	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C76]
65	VCSAPJ1EE225M	AD		C	Capacitor (25WV 2.2μF)	[C77]
66	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C78]
67	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C79]
68	VCCCTV1HH300J	AA		C	Capacitor (50WV 30PF)	[C80]
69	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C81]
70	VCCCTV1HH300J	AA		C	Capacitor (50WV 30PF)	[C82]
71	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C83]
72	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C84]
73	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C85]
74	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C86]
75	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C88]
76	VCSAPJ1CE226M	AF		C	Capacitor (16WV 22μF)	[C89]
77	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C90]
78	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C91]
79	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C92]
80	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C93]

12 Control board

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
81	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C94]
82	VCKYTV1HB222K	AA		C	Capacitor (50WV 2200PF)	[C95]
83	VCKYTV1HB222K	AA		C	Capacitor (50WV 2200PF)	[C96]
84	VCKYTV1HB222K	AA		C	Capacitor (50WV 2200PF)	[C97]
85	VCKYTV1HB222K	AA		C	Capacitor (50WV 2200PF)	[C98]
86	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF)	[C100]
87	QCNCM2353SC0H	AB		C	Connector (8pin)	[CNCCD]
88	QCNCM2346SC2J	AG		C	Connector (20pin)	[CNDR1]
89	QCNCM2346SC1F	AF		C	Connector (16pin)	[CNDR2]
90	QCNCM2389SC3J	AE		C	Connector (30pin)	[CNLIU]
91	QCNCW0341FCZZ	AG		C	Connector (13pin)	[CNMTH]
92	QCNCM2353SC1D	AC		C	Connector (14pin)	[CNPN1]
93	QCNCM2353SC1B	AB		C	Connector (12pin)	[CNPN2]
94	QCNCM2353SC1J	AB		C	Connector (10pin)	[CNSCN]
95	VHDiMN10///−1	AC		B	Diode (IMN10)	[DA1]
96	VHDiMN10///−1	AC		B	Diode (IMN10)	[DA2]
97	VHDiMN10///−1	AC		B	Diode (IMN10)	[DA3]
98	VHDiMN10///−1	AC		B	Diode (IMN10)	[DA4]
99	VRD−RC2EY000J	AA		C	Resistor (1/4W 0Ω ±5%)	[FL1]
100	VRD−RC2EY000J	AA		C	Resistor (1/4W 0Ω ±5%)	[FL2]
101	VRD−RC2EY000J	AA		C	Resistor (1/4W 0Ω ±5%)	[FL3]
102	VRD−RC2EY000J	AA		C	Resistor (1/4W 0Ω ±5%)	[FL4]
103	VRD−RC2EY000J	AA		C	Resistor (1/4W 0Ω ±5%)	[FL5]
104	VRD−RC2EY000J	AA		C	Resistor (1/4W 0Ω ±5%)	[FL6]
105	QSŌCZ6428ACZZ	AE		C	IC socket (28pin)	[IC1]
106	VHi27256FHU0B	BF	N	B	IC (27256FHU0B)	[IC1]
107	VHiH64180R18F	AX		B	IC (HD64180R18F)	[IC2]
108	QSŌCZ6440ACZZ	AG		C	IC socket (40pin)	[IC3]
109	VHi8749/FCR0B	AY		B	IC (8749/FCR0B)	[IC3]
110	VHiR96EFX//−1	BR		B	IC (R96EFX)	[IC4]
111	VHiTMS4256Z80	AZ		B	IC (TMS4256Z80)	[IC5]
112	VHiTMS4256Z80	AZ		B	IC (TMS4256Z80)	[IC6]
113	VHiTMS4256Z80	AZ		B	IC (TMS4256Z80)	[IC7]
114	VHiTMS4256Z80	AZ		B	IC (TMS4256Z80)	[IC8]
115	VHiTMS4256Z80	AZ		B	IC (TMS4256Z80)	[IC9]
116	VHiTMS4256Z80	AZ		B	IC (TMS4256Z80)	[IC10]
117	QSŌCZ2042SC32	AE		C	IC socket (32pin)	[IC11]
118	VHi27010FMH0B	BK	N	B	IC (27010FMH0B)	[IC11] [D]
	VHi27010FMi0D	BK	N	B	IC (27010FMI0D)	[IC11] [D1]
119	VHiHM6264LF12	AU		B	IC (HM6264LF12)	[IC12]
120	QSŌCZ2042SC32	AE		C	IC socket (32pin)	[IC14]
121	VHi27020FAL0B	BL	N	B	IC (27020FAL0B)	[IC14] [D]
	VHi27020FAM0C	BL	N	B	IC (27020FAM0C)	[IC14] [D1]
122	VHiLZ95H30/−1	AX		B	IC (LZ95H30)	[IC15]
123	VHiLZ95S13/−1	BL		B	IC (LZ95S13)	[IC16]
124	VHiM82C55AFP2	AN		B	IC (M82C55AFP2)	[IC17]
125	VHiHM6264LF12	AU		B	IC (HM6264LF12)	[IC18]
126	VHiMP7683/−1F	AX		B	IC (MP7683)	[IC19]
127	VHiMC74F139MF	AH		B	IC (74F139M)	[IC20]
128	VHiLZ95N18/−1	AR		B	IC (LZ95N18)	[IC21]
129	VHiMC74F139MF	AH		B	IC (74F139M)	[IC22]
130	VHiMC74F139MF	AH		B	IC (74F139M)	[IC23]
131	VHi43257GU12L	BA		B	IC (43257GU12L)	[IC24]
132	VHiH64180R18F	AX		B	IC (HD64180R18F)	[IC25]
133	VHiLU552B4/−1	AS		B	IC (LU552B4)	[IC26]
134	VHiTMS4256Z80	AZ		B	IC (TMS4256Z80)	[IC27]
135	VHiTMS4256Z80	AZ		B	IC (TMS4256Z80)	[IC28]
136	VHiTMS4256Z80	AZ		B	IC (TMS4256Z80)	[IC29]
137	VHiTMS4256Z80	AZ		B	IC (TMS4256Z80)	[IC30]
138	VHiMSM62X42−A	AW		B	IC (MSM62X42)	[IC31]
139	VHiBA4558F/−1	AD		B	IC (BA4558F)	[IC32]
140	VHiBA10339F−1	AD		B	IC (BA10339F)	[IC34]
141	VHiMC74HC04MF	AC		B	IC (MC74HC04F)	[IC35]
142	VHiSN7406NS−1	AF		B	IC (SN7406NS)	[IC36]
143	VHiMC74HC04MF	AC		B	IC (MC74HC04F)	[IC37]
144	VHiMC74HC14MF	AE		B	IC (MC74HC14)	[IC38]
145	VHiMC74HC04MF	AC		B	IC (MC74HC04F)	[IC39]
146	VHiSN74LS14MF	AE		B	IC (SN74LS14F)	[IC40]
147	VHiSN74LS06MF	AE		B	IC (SN74LS06F)	[IC41]
148	VHiTL084CN/−F	AN		B	IC (TL084CN)	[IC42]
149	VHiMC14066BMF	AD		B	IC (MC14066B)	[IC43]
150	VHiMC14053BMF	AE		B	IC (MC14053B)	[IC44]
151	VHiSN74F157−1	AH		B	IC (SN74F157)	[IC45]
152	VHiSN74F157−1	AH		B	IC (SN74F157)	[IC46]
153	VHiSN74F244−1	AH		B	IC (SN74F244)	[IC47]
154	VHiMC74HC245F	AG		B	IC (MC74HC245)	[IC48]
155	VHiSN74F157−1	AH		B	IC (SN74F157)	[IC49]
156	VHiSN74F157−1	AH		B	IC (SN74F157)	[IC50]
157	VHiSN74F244−1	AH		B	IC (SN74F244)	[IC51]
158	VHiSN7406NS−1	AF		B	IC (SN7406NS)	[IC52]

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NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
159	VHiSN7406NS-1	AF		B	IC (SN7406NS)	[IC53]
160	VRS-TS2AD000J	AA		C	Resistor (1/10W 0Ω ±5%)	[JP2]
161	VRS-TS2AD000J	AA		C	Resistor (1/10W 0Ω ±5%)	[JP4]
162	VRS-TS2AD000J	AA		C	Resistor (1/10W 0Ω ±5%)	[JP5]
163	VRS-TS2AD000J	AA		C	Resistor (1/10W 0Ω ±5%)	[JP7]
164	VRS-TS2AD000J	AA		C	Resistor (1/10W 0Ω ±5%)	[JP8]
165	VRS-TS2AD000J	AA		C	Resistor (1/10W 0Ω ±5%)	[JP9]
166	VRD-RC2EY000J	AA		C	Resistor (1/4W 0Ω ±5%)	[L1]
167	VRD-RC2EY000J	AA		C	Resistor (1/4W 0Ω ±5%)	[L2]
168	VRSTS2AD8662F	AA		C	Resistor (1/10W 6.6KΩ ±1%)	[R1]
169	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R2]
170	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R3]
171	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R4]
172	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R5]
173	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R6]
174	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R7]
175	VRS-TS2AD3R0J	AA		C	Resistor (1/10W 3.0Ω ±5%)	[R8]
176	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R9]
177	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R10]
178	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R11]
179	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R12]
180	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R13]
181	VRSTS2AD5110F	AA		C	Resistor (1/10W 511Ω ±1%)	[R14]
182	VRSTS2AD5110F	AA		C	Resistor (1/10W 511Ω ±1%)	[R15]
183	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R16]
184	VRS-TS2AD332J	AA		C	Resistor (1/10W 3.3KΩ ±5%)	[R17]
185	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R18]
186	VRS-TS2AD103F	AA		C	Resistor (1/10W 10KΩ ±1%)	[R19]
187	VRSTS2AD3652F	AA		C	Resistor (1/10W 36.5KΩ ±1%)	[R20]
188	VRSTS2AD3482F	AA		C	Resistor (1/10W 34.8KΩ ±1%)	[R21]
189	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R22]
190	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R23]
191	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R24]
192	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R25]
193	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R26]
194	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R27]
195	VRSTS2AD4642F	AA		C	Resistor (1/10W 46.4KΩ ±1%)	[R28]
196	VRS-TS2AD275J	AA		C	Resistor (1/10W 2.7MΩ ±5%)	[R29]
197	VRSTS2AD8662F	AA		C	Resistor (1/10W 86.6KΩ ±1%)	[R30]
198	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R31]
199	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R32]
200	VRS-TS2AD302J	AA		C	Resistor (1/10W 3.0KΩ ±5%)	[R33]
201	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R34]
202	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R35]
203	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R36]
204	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R37]
205	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R38]
206	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R39]
207	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R40]
208	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R41]
209	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R42]
210	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R43]
211	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R44]
212	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R45]
213	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R46]
214	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R47]
215	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R48]
216	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R51]
217	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R55]
218	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R56]
219	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R57]
220	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R58]
221	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R59]
222	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R60]
223	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R61]
224	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R62]
225	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R63]
226	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R64]
227	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R65]
228	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R66]
229	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R69]
230	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R70]
231	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R71]
232	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R72]
233	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R73]
234	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R74]
235	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R75]
236	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R76]
237	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R77]
238	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R78]

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NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
239	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R79]
240	VRS-TS2AD101J	AA		C	Resistor (1/10W 100Ω ±5%)	[R80]
241	VRS-TS2AD101J	AA		C	Resistor (1/10W 100Ω ±5%)	[R81]
242	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R82]
243	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R83]
244	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R84]
245	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R85]
246	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R86]
247	VRS-TS2AD332J	AA		C	Resistor (1/10W 3.3KΩ ±5%)	[R87]
248	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R88]
249	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R89]
250	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R90]
251	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R91]
252	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R92]
253	VRS-TS2AD101J	AA		C	Resistor (1/10W 100Ω ±5%)	[R93]
254	VRS-TS2AD101J	AA		C	Resistor (1/10W 100Ω ±5%)	[R94]
255	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R95]
256	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R96]
257	VRS-TS2AD562J	AA		C	Resistor (1/10W 5.6KΩ ±5%)	[R97]
258	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R98]
259	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R99]
260	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R100]
261	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R101]
262	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R102]
263	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R103]
264	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R104]
265	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R105]
266	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R106]
267	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R107]
268	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R108]
269	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R109]
270	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R110]
271	VRS-TS2AD221J	AA		C	Resistor (1/10W 220Ω ±5%)	[R111]
272	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R112]
273	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R113]
274	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R114]
275	VRS-TS2AD202J	AA		C	Resistor (1/10W 2.0KΩ ±5%)	[R115]
276	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R116]
277	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R117]
278	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R118]
279	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R119]
280	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R120]
281	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R121]
282	VRS-TS2AD102J	AA		C	Resistor (1/10W 1.0KΩ ±5%)	[R123]
283	VRS-TS2AD105J	AA		C	Resistor (1/10W 1.0MΩ ±5%)	[R124]
284	VRS-TS2AD681J	AA		C	Resistor (1/10W 680Ω ±5%)	[R125]
285	VRS-TS2AD101J	AA		C	Resistor (1/10W 100Ω ±5%)	[R126]
286	VRS-TS2AD202J	AA		C	Resistor (1/10W 2.0KΩ ±5%)	[R127]
287	VRS-TS2AD202J	AA		C	Resistor (1/10W 2.0KΩ ±5%)	[R128]
288	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R129]
289	VRS-TS2AD222J	AA		C	Resistor (1/10W 2.2KΩ ±5%)	[R130]
290	VRS-TS2AD222J	AA		C	Resistor (1/10W 2.2KΩ ±5%)	[R131]
291	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R132]
292	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R133]
293	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R134]
294	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R135]
295	VRS-TS2AD471J	AA		C	Resistor (1/10W 470Ω ±5%)	[R136]
296	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R137]
297	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R138]
298	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R139]
299	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R140]
300	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R141]
301	VRS-TS2AD202J	AA		C	Resistor (1/10W 2.0KΩ ±5%)	[R142]
302	VRS-TS2AD202J	AA		C	Resistor (1/10W 2.0KΩ ±5%)	[R143]
303	VRS-TS2AD202J	AA		C	Resistor (1/10W 2.0KΩ ±5%)	[R144]
304	VRS-TS2AD202J	AA		C	Resistor (1/10W 2.0KΩ ±5%)	[R145]
305	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R146]
306	VRS-TS2AD100J	AA		C	Resistor (1/10W 10Ω ±5%)	[R147]
307	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R148]
308	VRS-TS2AD471J	AA		C	Resistor (1/10W 470Ω ±5%)	[R149]
309	VRS-TS2AD202J	AA		C	Resistor (1/10W 2.0KΩ ±5%)	[R150]
310	VRS-TS2AD202J	AA		C	Resistor (1/10W 2.0KΩ ±5%)	[R151]
311	VRS-TS2AD202J	AA		C	Resistor (1/10W 2.0KΩ ±5%)	[R152]
312	VRS-TS2AD202J	AA		C	Resistor (1/10W 2.0KΩ ±5%)	[R153]
313	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R155]
314	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R156]
315	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R157]
316	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R158]
317	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R159]
318	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R160]

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NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
319	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R161]
320	VRS-TS2AD105J	AA		C	Resistor (1/10W 1.0MΩ ±5%)	[R162]
321	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R163]
322	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R164]
323	VRS-TS2AD222J	AA		C	Resistor (1/10W 2.2KΩ ±5%)	[R166]
324	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R167]
325	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R168]
326	VRS-TS2AD222J	AA		C	Resistor (1/10W 2.2KΩ ±5%)	[R169]
327	VRS-TS2AD122J	AA		C	Resistor (1/10W 1.2KΩ ±5%)	[R170]
328	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R172]
329	VRS-TS2AD102J	AA		C	Resistor (1/10W 1.0KΩ ±5%)	[R173]
330	VRS-TS2AD912J	AA		C	Resistor (1/10W 9.1KΩ ±5%)	[R174]
331	VRS-TS2AD100J	AA		C	Resistor (1/10W 10Ω ±5%)	[R175]
332	VRS-TS2AD100J	AA		C	Resistor (1/10W 10Ω ±5%)	[R176]
333	VRS-TS2AD100J	AA		C	Resistor (1/10W 10Ω ±5%)	[R177]
334	VRS-TS2AD100J	AA		C	Resistor (1/10W 10Ω ±5%)	[R178]
335	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R179]
336	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R180]
337	VRS-TS2AD471J	AA		C	Resistor (1/10W 470Ω ±5%)	[R181]
338	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R182]
339	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R183]
340	VRS-TS2AD100J	AA		C	Resistor (1/10W 10Ω ±5%)	[R184]
341	VRS-TS2AD100J	AA		C	Resistor (1/10W 10Ω ±5%)	[R185]
342	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R186]
343	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R187]
344	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R188]
345	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R189]
346	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R190]
347	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R191]
348	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R192]
349	VRS-TS2AD330J	AA		C	Resistor (1/10W 33Ω ±5%)	[R193]
350	VRS-TS2AD562J	AA		C	Resistor (1/10W 5.6KΩ ±5%)	[R194]
351	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R195]
352	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R196]
353	VRS-TS2AD471J	AA		C	Resistor (1/10W 470Ω ±5%)	[R197]
354	VRS-TS2AD471J	AA		C	Resistor (1/10W 470Ω ±5%)	[R198]
355	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R199]
356	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R200]
357	VRS-TP2BD680J	AA		C	Resistor (1/10W 1/8W 68Ω ±5%)	[R201]
358	VRS-TP2BD561J	AA		C	Resistor (1/10W 1/8W 560Ω ±5%)	[R202]
359	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R203]
360	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R204]
361	VRS-TS2AD471J	AA		C	Resistor (1/10W 470Ω ±5%)	[R205]
362	VRS-TS2AD471J	AA		C	Resistor (1/10W 470Ω ±5%)	[R206]
363	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R207]
364	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R208]
365	VRS-TS2AD101J	AA		C	Resistor (1/10W 100Ω ±5%)	[R209]
366	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%)	[R210]
367	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%)	[R211]
368	QSW-Z1067HCZZ	AF		B	Dip switch (4pin)	[SW1]
369	VS2SA1036KQRC	AB		B	Transistor (2SA1036KQRC)	[TR1]
370	VS2SA1036KQRC	AB		B	Transistor (2SA1036KQRC)	[TR2]
371	RCRSZ7007SCZZ	AD		B	Crystal (12.2MHz)	[XTAL1]
372	RCRSZ2051SCZZ	AD		B	Crystal (CSA10.0MT)	[XTAL2]
373	RCRSQ2054SCZZ	AT		B	Crystal (24.00014MHz)	[XTAL3]
374	RCRSP6635RCZZ	AD		B	Crystal (4.91Hz)	[XTAL5]
375	RCRSZ7007SCZZ	AD		B	Crystal (12.2MHz)	[XTAL6]
376	VHEHZ5C1///-1	AB		B	Zener diode (HZ5C1)	[ZD1]
377	LANGT2728SCZZ	AF		C	Cont.PWB angle	
378	PSPAN2344RCZZ	AB		C	Spacer (MPS06)	
380	XBPSD30P06KS0	AA		C	Screw (3×6KS)	
	(Unit)					
901	CPWBX2492SC32	CV	N	E	Control board (without ROM)	

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NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	VHV3P10W2//-1	AN		B	Varistor (3P-10-W2)	[AR1] [D]
2	RATTN2012SCZZ	AL		C	Arrestor (3P-08-P1)	[AR1] [D1]
3	VHi1G4B42//-1	AD		B	IC (1G4B42)	[BD1]
4	VHi1G4B42//-1	AD		B	IC (1G4B42)	[BD3]
5	VCSAVU1VE334M	AB		C	Capacitor (35WV 0.33μF)	[C1]
6	VCEAJU1EW226M	AB		C	Capacitor (25WV 22μF)	[C2]
7	VCEAJU1EW226M	AB		C	Capacitor (25WV 22μF)	[C3]
8	VCEAJU1EW226M	AB		C	Capacitor (25WV 22μF)	[C4]
9	VCFYJU2GA474K	AE		C	Capacitor (400WV 0.47μF)	[C5]

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NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
10	RC-EZ107VSC1C	AC		C	Capacitor (16WV 100μF) [C6]
11	VCEAJU1HW105M	AB		C	Capacitor (50WV 1.0μF) [C7]
12	RC-EZ106NSC1C	AB		C	Capacitor (16WV 10μF) [C8]
13	VCFYJU2EA205K	AG		C	Capacitor (250WV 2.0μF) [C9]
14	VCFYJU2JA103K	AC		C	Capacitor (630WV 0.010μF) [C10] [D]
15	VCFYJU2GA223K	AE		C	Capacitor (400WV 0.022μF) [C10] [D1]
16	VCQYNU1HM333K	AA		C	Capacitor (50WV 0.033μF) [C11]
17	VCQYNU1HM333K	AA		C	Capacitor (50WV 0.033μF) [C12]
18	VCFYJU2GA474K	AE		C	Capacitor (400WV 0.47μF) [C13]
19	VCFYJU2EA105K	AE		C	Capacitor (250WV 1μF) [C14]
20	RC-QF222FSC1H	AE		C	Capacitor (50WV 2200pF) [C15]
21	RC-QF222FSC1H	AE		C	Capacitor (50WV 2200pF) [C16]
22	RC-QF222FSC1H	AE		C	Capacitor (50WV 2200pF) [C17]
23	RC-QF222FSC1H	AE		C	Capacitor (50WV 2200pF) [C18]
24	VCFYJU2JA103K	AC		C	Capacitor (630WV 0.010μF) [C19] [D]
25	VCFYJU2GA223K	AE		C	Capacitor (400WV 0.022μF) [C19] [D1]
26	VCQYNU1HM104K	AB		C	Capacitor (50WV 0.1μF) [C20]
27	VCFYJU2EA684K	AD		C	Capacitor (250WV 0.68μF) [C21]
28	VCFYJU2EA225K	AG		C	Capacitor (250WV 2.2μF) [C22]
29	VCFYJU2EA473K	AC		C	Capacitor (250WV 0.047μF) [C23]
30	VRD-RC2EY000J	AA		C	Capacitor (1/4W 0Ω ±5%) [C24] [D1]
31	RC-EZ106NSC1C	AB		C	Capacitor (16WV 10μF) [C25]
32	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF) [C26]
33	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF) [C27]
34	VCKYTV1HF223Z	AA		C	Capacitor (50WV 0.022μF) [C28]
35	VCCCTV1HH121J	AA		C	Capacitor (50WV 120pF) [C29]
36	VCKYTV1HB681K	AA		C	Capacitor (50WV 680pF) [C30]
37	VCKYTV1HB123K	AA		C	Capacitor (50WV 0.012μF) [C31]
38	VCKYTV1HB681K	AA		C	Capacitor (50WV 680pF) [C32]
39	VCKYTV1HB472K	AA		C	Capacitor (50WV 4700pF) [C33]
40	VCKYTV1HB153K	AA		C	Capacitor (50WV 0.015μF) [C34]
41	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF) [C35]
42	VCKYTV1HB472K	AA		C	Capacitor (50WV 4700pF) [C36]
43	VCKYTV1HB822K	AA		C	Capacitor (50WV 8200pF) [C37]
44	VCKYTV1HB681K	AA		C	Capacitor (50WV 680pF) [C38]
45	VCKYTV1HB123K	AA		C	Capacitor (50WV 0.012μF) [C40]
46	VCKYTV1HB102K	AA		C	Capacitor (50WV 1000pF) [C41]
47	VCKYTV1HB392K	AA		C	Capacitor (50WV 3900pF) [C43]
48	VCCCTV1HH151J	AA		C	Capacitor (50WV 150pF) [C44]
49	VCQYNU1HM334K	AD		C	Capacitor (50WV 0.33μF) [C45] [D]
50	QCNCM2389SC3J	AE		C	Connector (30pin) [CNLIU]
51	VHD10E1////-1	AA		B	Diode (10E1) [D1]
52	VHD10E4////-1	AB		B	Diode (10E4) [D2]
53	VHD10E1////-1	AA		B	Diode (10E1) [D3]
54	VHiTHS50///-1	AQ		B	IC (THS50) [IC1]
55	VHiLM311N///-1	AD		B	IC (LM311N) [IC2]
56	VHiNJM4558D-1	AN		B	IC (NJM4558D) [IC3]
57	VHiNJM4558D-1	AN		B	IC (NJM4558D) [IC4]
58	VHi12G2000B21	AX		B	IC (12G2000B21) [IC5]
59	VHiNJM4558D-1	AN		B	IC (NJM4558D) [IC6]
60	VHiNJM4558D-1	AN		B	IC (NJM4558D) [IC7]
61	VHiNJM4558D-1	AN		B	IC (NJM4558D) [IC8]
62	VHiMC14053/-1	AE		B	IC (MC14053) [IC9]
63	VHiNJM4558D-1	AN		B	IC (NJM4558D) [IC10]
64	VHiNJM4558D-1	AN		B	IC (NJM4558D) [IC11]
65	VHiNJM4558D-1	AN		B	IC (NJM4558D) [IC12]
66	VHiLM311N///-1	AD		B	IC (LM311N) [IC13]
73	RCÕRF2013SCZZ	AH		C	Core (ESD-H-14U) [L1]
74	RCÕRF2013SCZZ	AH		C	Core (ESD-H-14U) [L2]
75	RCiLF2080SCZZ	AF		C	Coil (4.7mH) [L3]
76	RCiLF6971KCZZ	AH		C	Coil (3.3mH) [L7] [D]
77	QCNCW2379SC0F	AH		C	Connector (6pin) [LNJ]
78	VHPPC852///-1	AE		B	Photo transistor (PC852) [PC1]
79	VHPPC111S//-1	AF		B	Photo transistor (PC111S) [PC2]
80	VHPPC852///-1	AE		B	Photo transistor (PC852) [PC4]
81	VSDTC114EK/-1	AB		B	Transistor (DTC114EK) [Q1]
82	VSDTC114EK/-1	AB		B	Transistor (DTC114EK) [Q2]
83	VS2SC2712-G-1	AC		B	Transistor (2SC2712) [Q3]
84	VS2SC2712-G-1	AC		B	Transistor (2SC2712) [Q4]
85	VSDTC114EK/-1	AB		B	Transistor (DTC114EK) [Q5]
86	VSDTC114EK/-1	AB		B	Transistor (DTC114EK) [Q6]
87	VSDTC114EK/-1	AB		B	Transistor (DTC114EK) [Q7]
88	VSDTC114EK/-1	AB		B	Transistor (DTC114EK) [Q8]
89	VSDTC114EK/-1	AB		B	Transistor (DTC114EK) [Q9]
90	VRS-HT3AA333J	AA		C	Resistor (1W 33KΩ ±5%) [R1]
91	VRS-HT3AA223J	AA		C	Resistor (1W 22KΩ ±5%) [R2]
92	VRS-HT3AA221J	AA		C	Resistor (1W 220Ω ±5%) [R3]
93	VRS-HT3AA561J	AA		C	Resistor (1W 560Ω ±5%) [R4]
94	VRS-HT3AA621J	AA		C	Resistor (1W 620Ω ±5%) [R5]
95	VRS-HT3AA101J	AA		C	Resistor (1W 100Ω ±5%) [R6] [D]

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NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
96	VRS-HT3DA561J	AA		C	Resistor (2W 560Ω ±5%) [R7]
97	VRS-HT3DA181J	AA		C	Resistor (2W 180Ω ±5%) [R8]
98	VRS-HT3DA750J	AA		C	Resistor (2W 75Ω ±5%) [R9]
99	VRS-HT3DA301J	AA		C	Resistor (2W 300Ω ±5%) [R10] [D]
	QPIN-2005SCZZ	AA		C	Pin [R10] [D1]
100	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%) [R11]
101	VRS-TS2AD393J	AA		C	Resistor (1/10W 39KΩ ±5%) [R12]
102	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%) [R13] [D]
	VRS-TS2AD183J	AA		C	Resistor (1/10W 18KΩ ±5%) [R13] [D1]
103	VRS-TS2AD102J	AA		C	Resistor (1/10W 1.0KΩ ±5%) [R14]
104	VRS-TS2AD471J	AA		C	Resistor (1/10W 470Ω ±5%) [R15]
105	VRS-TS2AD104J	AA		C	Resistor (1/10W 100KΩ ±5%) [R16]
106	VRS-TS2AD224J	AA		C	Resistor (1/10W 220KΩ ±5%) [R17]
107	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%) [R18]
108	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%) [R19]
109	VRS-TS2AD243J	AA		C	Resistor (1/10W 24KΩ ±5%) [R20]
110	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%) [R21]
111	VRS-TS2AD102J	AA		C	Resistor (1/10W 1.0KΩ ±5%) [R22]
112	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%) [R23]
113	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%) [R24]
114	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%) [R25]
115	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%) [R26]
116	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%) [R27]
117	VRS-TS2AD102J	AA		C	Resistor (1/10W 1.0KΩ ±5%) [R28]
118	VRS-TS2AD754J	AA		C	Resistor (1/10W 750KΩ ±5%) [R29]
119	VRSTS2AD5112F	AA		C	Resistor (1/10W 51.1KΩ ±1%) [R30]
120	VRS-TS2AD473J	AA		C	Resistor (1/10W 47KΩ ±5%) [R31]
121	VRSTS2AD1583F	AA		C	Resistor (1/10W 158KΩ ±1%) [R32]
122	VRSTS2AD6983F	AA		C	Resistor (1/10W 698KΩ ±1%) [R33]
123	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%) [R34]
124	VRS-TS2AD622J	AA		C	Resistor (1/10W 6.2KΩ ±5%) [R35]
125	VRS-TS2AD333J	AA		C	Resistor (1/10W 33KΩ ±5%) [R36]
126	VRS-TS2AD822J	AA		C	Resistor (1/10W 8.2KΩ ±5%) [R37]
127	VRS-TS2AD203J	AA		C	Resistor (1/10W 20KΩ ±5%) [R38]
128	VRS-TS2AD203J	AA		C	Resistor (1/10W 20KΩ ±5%) [R39]
129	VRSTS2AD6983F	AA		C	Resistor (1/10W 698KΩ ±1%) [R40]
130	VRSTS2AD1583F	AA		C	Resistor (1/10W 158KΩ ±1%) [R41]
131	VRS-TS2AD102F	AA		C	Resistor (1/10W 1KΩ ±1%) [R42]
132	VRS-TS2AD562J	AA		C	Resistor (1/10W 5.6KΩ ±5%) [R43]
133	VRSTS2AD8872F	AA		C	Resistor (1/10W 88.7KΩ ±1%) [R44]
134	VRSTS2AD6342F	AA		C	Resistor (1/10W 63.4KΩ ±1%) [R45]
135	VRSTS2AD6983F	AA		C	Resistor (1/10W 698KΩ ±1%) [R46]
136	VRSTS2AD6983F	AA		C	Resistor (1/10W 698KΩ ±1%) [R47]
137	VRSTS2AD8872F	AA		C	Resistor (1/10W 88.7KΩ ±1%) [R49]
138	VRSTS2AD6342F	AA		C	Resistor (1/10W 63.4KΩ ±1%) [R50]
139	VRSTS2AD6983F	AA		C	Resistor (1/10W 698KΩ ±1%) [R51]
140	VRSTS2AD6983F	AA		C	Resistor (1/10W 698KΩ ±1%) [R52]
141	VRS-TS2AD203F	AA		C	Resistor (1/10W 20KΩ ±1%) [R53]
142	VRS-TS2AD203F	AA		C	Resistor (1/10W 20KΩ ±1%) [R54]
143	VRS-TS2AD471J	AA		C	Resistor (1/10W 470Ω ±5%) [R55]
144	VRS-TS2AD000J	AA		C	Resistor (1/10W 0Ω ±5%) [R56]
145	VRS-TS2AD472J	AA		C	Resistor (1/10W 4.7KΩ ±5%) [R57]
146	VRS-TS2AD362J	AA		C	Resistor (1/10W 3.6KΩ ±5%) [R58]
147	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%) [R59]
148	VRS-TS2AD102J	AA		C	Resistor (1/10W 1.0KΩ ±5%) [R60]
149	VRS-TS2AD133J	AA		C	Resistor (1/10W 13KΩ ±5%) [R62]
150	VRS-TS2AD823J	AA		C	Resistor (1/10W 82KΩ ±5%) [R63]
151	VRS-TS2AD163J	AA		C	Resistor (1/10W 16KΩ ±5%) [R64]
152	VRS-TS2AD273J	AA		C	Resistor (1/10W 27KΩ ±5%) [R65]
153	VRS-TS2AD103F	AA		C	Resistor (1/10W 10KΩ ±1%) [R66]
154	VRS-TS2AD203F	AA		C	Resistor (1/10W 20KΩ ±1%) [R67]
155	VRS-TS2AD102J	AA		C	Resistor (1/10W 1KΩ ±5%) [R68] [D]
156	VRS-TS2AD153J	AA		C	Resistor (1/10W 15KΩ ±5%) [R68] [D1]
157	VRS-TS2AD221J	AA		C	Resistor (1/10W 220Ω ±5%) [R69]
158	VRSTS2AD6040F	AA		C	Resistor (1/10W 604Ω ±1%) [R70]
159	VRS-TS2AD471J	AA		C	Resistor (1/10W 470Ω ±5%) [R71]
160	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%) [R72]
161	VRS-TS2AD393J	AA		C	Resistor (1/10W 39KΩ ±5%) [R73]
162	VRS-TS2AD223J	AA		C	Resistor (1/10W 22KΩ ±5%) [R74] [D]
163	VRS-TS2AD203J	AA		C	Resistor (1/10W 20KΩ ±5%) [R74] [D1]
164	VRS-TS2AD683J	AA		C	Resistor (1/10W 68KΩ ±5%) [R75]
165	VRS-TS2AD103J	AA		C	Resistor (1/10W 10KΩ ±5%) [R76] [D1]
166	VRS-TS2AD102J	AA		C	Resistor (1/10W 1.0KΩ ±5%) [R77]
167	VRS-TS2AD103F	AA		C	Resistor (1/10W 10KΩ ±1%) [R78]
168	VRS-TS2AD153F	AA		C	Resistor (1/10W 15KΩ ±1%) [R79]
169	VRS-TS2AD912J	AA		C	Resistor (1/10W 9.1KΩ ±5%) [R80]
170	VRS-TS2AD183F	AA		C	Resistor (1/10W 18KΩ ±1%) [R81]
171	VRS-TS2AD133J	AA		C	Resistor (1/10W 13KΩ ±5%) [R82]
172	VRS-TS2AD103F	AA		C	Resistor (1/10W 10KΩ ±1%) [R83]
173	VRS-TS2AD133J	AA		C	Resistor (1/10W 13KΩ ±5%) [R84] [D]

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NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
174	VRS-TS2AD153J	AA		C	Resistor (1/10W 15KΩ ±5%)	[R84] [D1]
175	VRS-TS2AD203F	AA		C	Resistor (1/10W 20KΩ ±1%)	[R85]
176	VRS-TS2AD203F	AA		C	Resistor (1/10W 20KΩ ±1%)	[R86]
177	VRS-TS2AD123J	AA		C	Resistor (1/10W 12KΩ ±5%)	[R88]
178	RRLYZ3417QCN1	AU		B	Relay (G6CN-2D)	[RL1]
179	RRLYZ2113QCZZ	AV		B	Relay (UPM-15012H)	[RL2]
180	QCNCW1057ACZZ	AB		C	Connector (Short socket)	[SP]
181	QCNCM1058AC06	AC		C	Connector (6pin)	[SP1~2]
182	QCNCM1058AC04	AB		C	Connector (4pin)(Short pin)	[SP3~4]
183	QCNCM1060AC03	AB		B	Connector (3pin)	[SP5]
184	QCNCM1060AC03	AB		B	Connector (3pin)	[SP6]
185	QCNCM1058AC06	AC		C	Connector (6pin)	[SP7~9]
186	QCNCM1060AC03	AB		B	Connector (3pin)	[SP10]
187	QCNCM2393SC0F	AD		C	Connector (6pin)	[SP11~13]
188	QCNCM1060AC03	AB		B	Connector (3pin)	[SP14]
189	QCNCM1058AC08	AB		C	Connector (8pin)	[SP15~18]
190	QCNCM1058AC06	AC		C	Connector (6pin)	[SP19~21]
191	QCNCM1058AC06	AC		C	Connector (6pin)	[SP22~24]
192	QCNCM1060AC03	AB		B	Connector (3pin)	[SP25]
193	QCNCM1058AC08	AB		C	Connector (8pin)	[SP26~29]
194	QCNCM1060AC03	AB		B	Connector (3pin)	[SP30]
195	QCNCM1060AC03	AB		B	Connector (3pin)	[SP31]
196	QCNCM1060AC03	AB		B	Connector (3pin)	[SP32]
197	QCNCM1058AC06	AC		C	Connector (6pin)	[SP33~35]
198	QCNCM1060AC03	AB		B	Connector (3pin)	[SP36]
199	RCiLC2086SCZZ	AQ		C	Choke coil	[T1]
200	RTRNZ2116SCZZ	AU		B	Line transformer	[T2]
201	VHVVR61S///-1	AG		B	Varistor (VR61S)	[VA1]
202	VHVNV240D14-1	AC		B	Varistor (NV240D14)	[VA2]
203	VHVNV100D05-1	AD		B	Varistor (NV100D05)	[VA3]
204	VHVNV027D05-1	AC		B	Varistor (NV027D05)	[VA4]
205	RVR-M1411QCZZ	AM		B	Variable resistor (10KΩ)	[VR1] [D]
206	RVR-M1411QCZZ	AM		B	Variable resistor (10KΩ)	[VR2] [D]
207	VHERD18EL2/-1	AA		B	Zener diode (RD18EL2)	[ZD1]
208	VHERD22FB//-1	AD		B	Zener diode (RD22FB)	[ZD2]
209	VHERD22FB//-1	AD		B	Zener diode (RD22FB)	[ZD3]
210	VHERD8.2EB/-1	AB		B	Zener diode (RD8.2EB)	[ZD4]
211	QCNW-3493SCZZ	AB		C	ARG cable	
	(Unit)					
901	CPWBN2471SC01	BX		E	Liu board	[D]
	CPWBN2471SC02	BX		E	Liu board	[D1]

14 PCU PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	VCKYTQ1HF223Z	AA		C	Capacitor (25WV 0.022μF)	[C1]
2	VCCCTV1HH220J	AA		C	Capacitor (50WV 22PF)	[C2]
3	VCCCTV1HH220J	AA		C	Capacitor (50WV 22PF)	[C3]
4	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C4]
5	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C5]
6	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C6]
7	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C7]
8	VCCCTV1HH220J	AA		C	Capacitor (50WV 22PF)	[C8]
9	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C9]
10	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C10]
11	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C11]
12	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C12]
13	VCKYTV1HR472K	AA		C	Capacitor (50WV 4700PF)	[C21]
14	VCCCTV1HH220J	AA		C	Capacitor (50WV 22PF)	[C22]
15	VCCCTV1HH471J	AA		C	Capacitor (50WV 470PF)	[C23]
16	VCCCTV1HH471J	AA		C	Capacitor (50WV 470PF)	[C24]
17	VCCCTV1HH471J	AA		C	Capacitor (50WV 470PF)	[C26]
18	VCCCTV1HH471J	AA		C	Capacitor (50WV 470PF)	[C27]
19	VCCCTV1HH471J	AA		C	Capacitor (50WV 470PF)	[C29]
20	VCCCTV1HH471J	AA		C	Capacitor (50WV 470PF)	[C30]
21	VCKYTQ1HF223Z	AA		C	Capacitor (25WV 0.022μF)	[C31]
22	VCKYTQ1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C32]
23	VCEAEA1AW476M	AB		C	Capacitor (10WV 47μF)	[C33]
24	VCEAEA1AW476M	AB		C	Capacitor (10WV 47μF)	[C34]
25	VCEAEA1AW476M	AB		C	Capacitor (10WV 47μF)	[C35]
26	VCCCTV1HH471J	AA		C	Capacitor (50WV 470PF)	[C36]
27	VCCCTV1HH471J	AA		C	Capacitor (50WV 470PF)	[C37]
28	VCCCTV1HH471J	AA		C	Capacitor (50WV 470PF)	[C38]
29	VCCCTV1HH471J	AA		C	Capacitor (50WV 470PF)	[C39]
30	VCCCTV1HH471J	AA		C	Capacitor (50WV 470PF)	[C40]
31	QCNCM0340FCZZ	AC		C	Connector (12pin)	[CN11]

14 PCU PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
32	QCNCM0339FCZZ	AC		C	Connector (15pin)	[CN12]
33	QCNCM0339FCZZ	AC		C	Connector (15pin)	[CN13]
34	QCNCM0542FCZZ	AC		C	Connector (6pin)	[CN14]
35	QCNCM0541FCZZ	AD		C	Connector (20pin)	[CN15]
36	QCNCM0540FCZZ	AD		C	Connector (14pin)	[CN17]
37	VHDDA204K//-1	AC		B	Diode (DA204K)	[D1~2]
38	VHDDA204K//-1	AC		B	Diode (DA204K)	[D3~4]
39	VHDDA204K//-1	AC		B	Diode (DA204K)	[D5~6]
40	VHDDA204K//-1	AC		B	Diode (DA204K)	[D7~8]
41	RFiLN1004AC13	AC		C	Filter (S310-B101M)	[FL1]
42	VHi78214GC537	AY		B	IC (78214GC537)	[IC1]
43	VHiLZ93M27////	AR		B	IC (LZ93M27)	[IC2]
44	VHiX2444P////	AN		B	IC (X2444P)	[IC3]
45	VHiMC1413P/-1	AD		B	IC (MC1413P)	[IC4]
46	VHiMC1413P/-1	AD		B	IC (MC1413P)	[IC5]
47	VRS-TP2BD202J	AA		C	Resistor (1/8W 2.0KΩ ±5%)	[R1]
48	VRS-TP2BD202J	AA		C	Resistor (1/8W 2.0KΩ ±5%)	[R2]
49	VRS-TP2BD202J	AA		C	Resistor (1/8W 2.0KΩ ±5%)	[R3]
50	VRS-TP2BD202J	AA		C	Resistor (1/8W 2.0KΩ ±5%)	[R4]
51	VRS-TP2BD202J	AA		C	Resistor (1/8W 2.0KΩ ±5%)	[R5]
52	VRS-TP2BD202J	AA		C	Resistor (1/8W 2.0KΩ ±5%)	[R6]
53	VRS-TP2BD202J	AA		C	Resistor (1/8W 2.0KΩ ±5%)	[R7]
54	VRS-TP2BD202J	AA		C	Resistor (1/8W 2.0KΩ ±5%)	[R8]
55	VRS-TP2BD202J	AA		C	Resistor (1/8W 2.0KΩ ±5%)	[R9]
56	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R10]
57	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R11]
58	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R12]
59	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R13]
60	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R14]
61	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R15]
62	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R16]
63	VRS-TP2BD221J	AB		C	Resistor (1/8W 220Ω ±5%)	[R17]
64	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R18]
65	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R19]
66	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R20]
67	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R21]
68	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R22]
69	VRS-TP2BD221J	AB		C	Resistor (1/8W 220Ω ±5%)	[R23]
70	VRS-TP2BD331J	AB		C	Resistor (1/8W 330Ω ±5%)	[R24]
71	VRS-TP2BD202J	AA		C	Resistor (1/8W 2.0KΩ ±5%)	[R25]
72	VRS-TP2BD105J	AA		C	Resistor (1/8W 1.0MΩ ±5%)	[R26]
73	VRD-RC2EY471J	AA		C	Resistor (1/4W 470Ω ±5%)	[R27]
74	RCDRF2048SCZZ	AG	N	C	Core (2643-00050)	[R27]
75	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R28]
76	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R29]
77	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R30]
78	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R31]
79	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R32]
80	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R33]
81	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R34]
82	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R35]
83	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R36]
84	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R37]
85	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R38]
86	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R39]
87	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R40]
88	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R41]
89	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R42]
90	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R43]
91	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R44]
92	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R45]
93	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R46]
94	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R47]
95	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R48]
96	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R49]
97	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R50]
98	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R51]
99	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R52]
100	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R53]
101	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R54]
102	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R55]
103	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R56]
104	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R57]
105	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R58]
106	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R59]
107	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R60]
108	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R61]
109	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R62]
110	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R63]
111	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R64]

14 PCU PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
112	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R65]
113	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R66]
114	VRS-TP2BD473J	AA		C	Resistor (1/8W 47KΩ ±5%)	[R67]
115	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R68]
116	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R69]
117	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R70]
118	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R71]
119	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R72]
120	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R73]
121	VRS-TP2BD392F	AA		C	Resistor (1/8W 3.9KΩ ±1%)	[R74]
122	VRS-TP2BD473J	AA		C	Resistor (1/8W 47KΩ ±5%)	[R76]
123	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R77]
124	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R78]
125	VRS-TP2BD122J	AA		C	Resistor (1/8W 1.2KΩ ±5%)	[R79]
126	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R81]
127	VRS-TP2BD472J	AA		C	Resistor (1/8W 4.7KΩ ±5%)	[R82]
128	VRS-TP2BD472J	AA		C	Resistor (1/8W 4.7KΩ ±5%)	[R83]
129	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R84]
130	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R85]
131	VRS-TP2BD472J	AA		C	Resistor (1/8W 4.7KΩ ±5%)	[R86]
132	VRS-TP2BD472J	AA		C	Resistor (1/8W 4.7KΩ ±5%)	[R87]
133	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R88]
134	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R89]
135	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R90]
136	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R91]
137	VRS-TP2BD472J	AA		C	Resistor (1/8W 4.7KΩ ±5%)	[R92]
138	VRS-TP2BD221J	AB		C	Resistor (1/8W 220Ω ±5%)	[R93]
139	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R94]
140	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R95]
141	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R96]
142	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R97]
143	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%)	[R98]
144	RCRSQ2060SCZZ	AH		B	Crystal (19.63MHz)	[X1]
145	RCRSP1012HCZZ	AK		B	Crystal (11.0592MHz)	[X2]
146	TLABP3000SCZZ	AA		D	Label	
	(Unit)					
901	CPWBS2348SC08	BS	N	E	PCU PWB unit	

15 DC power supply PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	0CGiPADDR51//	AK		C	Resistor (1/8W 22Ω)	[R51]
2	0CGiPADDR52//	AT		C	Resistor (2W 120Ω)	[R52]
3	0CGiPADDR53//	AK		C	Manganin wire (φ1.1mm)	[R53]
4	0CGiPADDR56//	AK		C	Resistor (1/8W 100Ω)	[R56]
5	0CGiPADDR57//	AK		C	Resistor (1/8W 18KΩ)	[R57]
6	0CGiPADDR58//	AK		C	Resistor (1/8W 11KΩ)	[R58]
7	0CGiPADDR59//	AK		C	Resistor (1/8W 150Ω)	[R59]
8	0CGiPADDR60//	AK		C	Resistor (1/8W 6.8KΩ)	[R60]
9	0CGiPADDR61//	AK		C	Resistor (1/8W 1.8KΩ)	[R61]
10	0CGiPADDR62//	AK		C	Resistor (1/8W 1.3KΩ)	[R62]
11	0CGiPADDR65//	AK		C	Resistor (1/8W 8.2KΩ)	[R65]
12	0CGiPADDR66//	AK		C	Resistor (1/8W 10KΩ)	[R66]
13	0CGiPADDR67//	AK		C	Resistor (1/8W 1.0KΩ)	[R67,72]
14	0CGiPADDR68//	AK		C	Resistor (1/8W 4.3KΩ)	[R68]
15	0CGiPADDR69//	AK		C	Resistor (1/8W 2.2KΩ)	[R69,70]
16	0CGiPADDR71//	AK		C	Resistor (1/8W 15KΩ)	[R71]
17	0CGiPADDR73//	AT		C	Resistor (2W 430Ω ±5%)	[R73,74]
18	0CGiPADDD51//	AK		B	Diode (ERA15-02)	[D51,52,53]
19	0CGiPADDD54//	AX		B	Diode (ESAC82-004)	[D54]
20	0CGiPADDD55//	AK		B	Diode (1SS131)	[D55,56,57]
21	0CGiPADDC51//	AK		C	Capacitor (25V 220μF)	[C51,52]
22	0CGiPADDC53//	AK		C	Capacitor (50V 103)	[C53,54,58,61]
23	0CGiPADDC55//	AQ		C	Capacitor (35V 470μF)	[C55,56,57]
24	0CGiPADDC59//	AT		C	Capacitor (10V 1000μF)	[C59,60]
25	0CGiPADDC62//	AK		C	Capacitor (50V 332)	[C62]
26	0CGiPADDC64//	AK		C	Capacitor (50V 1μF)	[C64]
27	0CGiPADDC65//	AK		C	Capacitor (50V 0.68μF)	[C65]
28	0CGiPADDC66//	AK		C	Capacitor (50V 0.1μF)	[C66,68]
29	0CGiPADDC67//	AK		C	Capacitor (10WV 22μF)	[C67]
30	0CGiPADDQ51//	AX		B	Transistor (2SA1567)	[Q51]
31	0CGiPADDQ52//	AK		B	Transistor (RT1N434S)	[Q52]
32	0CGiPADDQ53//	AK		B	Transistor (2SC2603)	[Q53,54]
33	0CGiPADDiC51/	AT		B	IC (78M12)	[IC51]
34	0CGiPADDiC52/	AT		B	IC (79M12)	[IC52]
35	0CGiPADDiC53/	BK		B	HIC (YF-146)	[IC53]

15 DC power supply PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
36	0CGiPADDiC54/	AT		B	IC (M51958B)	[IC54]
37	0CGiPADDVR1//	AK		B	Variable resistor (VG067 1KΩ)	[VR1]
38	0CGiPADDL51//	BB		C	Coil (MLL−5B)	[L51]
39	0CGiPADDL52//	BF		C	Coil (SLT−7)	[L52]
40	0CGiPADDCN1//	AX		C	Connector (5145−12AH)	[CN1]
41	0CGiPADDCN2//	BB		C	Connector (PCN12EA−32P−2)	[CN2]
42	0CGiPADDCN3//	AX		C	Connector (RDEF1−9P)	[CN3]
43	0CGiPADDCN11/	AT		C	Connector (DF3−15S−2DSA)	[CN11,12]
44	0CGiPADDCN13/	AT		C	Connector (DF3−12S−2DSA)	[CN13]
⚠ 45	0CGiPADDF4///	AT		A	Fuse (19374 3.15A)	[F4]
46	0CGiPADDHS///	AT		C	Heat sink E	
	(Unit)					
901	CPWBF0772FC31	BL		E	DC power supply PWB unit (200V series)	

16 AC power supply PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	0CGiPAAD2R1F/	AK		C	Resistor (1/2W 470KΩ)	[R1,2]
2	0CGiPAAD2R3F/	AT		C	Resistor (1W 100Ω)	[R3,5]
3	0CGiPAAD2R4F/	AK		C	Resistor (1/2W 100Ω)	[R4]
4	0CGiPAAD2R6F/	AT		C	Resistor (2W 56KΩ)	[R6]
5	0CGiPAAD2R7F/	AT		C	Resistor (2W 75Ω)	[R7]
6	0CGiPAAD2R8F/	AK		C	Resistor (3/4W 300KΩ)	[R8]
7	0CGiPAAD2R9F/	AK		C	Manganese wire (φ0.35mm)	[R9]
8	0CGiPAAD2R10F	AK		C	Resistor (1/5W 82Ω)	[R10]
9	0CGiPAAD2R17F	AK		C	Resistor (1/2W 2.7KΩ)	[R17]
10	0CGiPAAD2R18F	AK		C	Resistor (1/2W 1.0KΩ)	[R18]
11	0CGiPAAD2R19F	AK		C	Resistor (1/5W 100KΩ)	[R19]
12	0CGiPAAD2R20F	AK		C	Resistor (1/8W 5.1KΩ)	[R20]
13	0CGiPAAD2R21F	AK		C	Resistor (1/2W 22Ω)	[R21,22,23]
14	0CGiPAAD2R25F	AK		C	Resistor (1/2W 560Ω)	[R25]
15	0CGiPAAD2R26F	AT		C	Resistor (1W 1.0KΩ)	[R26]
16	0CGiPAAD2C1F/	AT		C	Capacitor (0.47μF)	[C1]
17	0CGiPAAD2R40F	AK		C	Resistor (1/8W 2.2Ω)	[R40]
18	0CGiPAAD2R41F	AK		C	Resistor (1/8W 13KΩ)	[R41]
19	0CGiPAAD2R42F	AK		C	Resistor (1/8W 1.6KΩ)	[R42]
20	0CGiPAAD2C5F/	AT		C	Capacitor (0.22μF)	[C5]
21	0CGiPAAD2C2F/	AK		C	Capacitor (222)	[C2,3,6,7]
22	0CGiPAAD2C8F/	AT		C	Capacitor (0.033μF)	[C8]
23	0CGiPAAD2C9F/	AK		C	Capacitor (50V 2.2μF)	[C9]
24	0CGiPAAD2C10F	BB		C	Capacitor (400V 150μF)	[C10]
25	0CGiPAAD2C11F	AK		C	Capacitor (1000V 103)	[C11]
26	0CGiPAAD2C12F	AK		C	Capacitor (1000V 221R)	[C12]
27	0CGiPAAD2C13F	AK		C	Capacitor (35V 47μF)	[C13]
28	0CGiPAAD2C14F	AK		C	Capacitor (35V 100μF)	[C14]
29	0CGiPAAD2C16F	AK		C	Capacitor (50V 331 B)	[C16]
30	0CGiPAAD2C17F	AT		C	Capacitor (50V 473)	[C17,42]
31	0CGiPAAD2C24F	AT		C	Capacitor (35V 680μF)	[C24,25,26]
32	0CGiPAAD2C27F	AT		C	Capacitor (25V 470μF)	[C27,28]
33	0CGiPAAD2C42F	AK		C	Capacitor (50V 333)	[C42]
34	0CGiPAAD2C30F	AT		C	Capacitor (250V 0.1μF)	[C30]
35	0CGiPAAD2C40F	AK		C	Capacitor (50V 1μF)	[C40]
36	0CGiPAAD2C41F	AK		C	Capacitor (50V 10μF)	[C41]
37	0CGiPAAD2C43F	AT		C	Capacitor (250V 103)	[C43]
38	0CGiPAAD2D1F/	AT		C	Diode (ERB44−08)	[D1]
39	0CGiPAAD2D2F/	AK		C	Diode (ERA15−02)	[D2]
40	0CGiPAAD2D3F/	AK		C	Diode (ERB91−02)	[D3,5,6]
41	0CGiPAAD2D4F/	AX		C	Diode (ESAC92M−02)	[D4]
42	0CGiPAAD2D7F/	AK		C	Diode (ERA15−04)	[D7,8]
43	0CGiPAAD2B1F/	AX		C	Diode (RB406)	[B1]
44	0CGiPAAD2Q1F/	BB		B	Transistor (2SK 1044)	[Q1]
45	0CGiPAAD2P1F/	BB		B	Photo coupler (S21ME4)	[P1]
46	0CGiPAAD2P2F/	AX		B	Photo coupler (PC113)	[P2,3,4]
47	0CGiPAAD2TR1F	AX		B	Triac (BCR6AM−12L)	[TR1]
48	0CGiPAAD2V1F/	AQ		B	Varistor (ENC−471KD)	[V1]
49	0CGiPAAD2iC3F	AT		B	IC protector (ICP−N25)	[IC3]
50	0CGiPAAD2SR1F	AX		B	Thermistor (16D−13)	[SR1]
51	0CGiPAAD2iC1F	BK		B	HIC (YR−144)	[IC1]
52	0CGiPAAD2iC2F	AT		B	IC (AN5431−AA)	[IC2]
53	0CGiPAAD2L1F/	BK		C	Coil (XFL−1)	[L1]
54	0CGiPAAD2L2F/	BK		C	Coil (MLL−3)	[L2]
55	0CGiPAAD2L3F/	AX		C	Coil (SLL−8)	[L3]
56	0CGiPAAD2L4F/	BB		C	Coil (MLL−5)	[L4]
57	0CGiPAAD2T1F/	BS		B	Transformer (SMT−19)	[T1]
58	0CGiPAAD2CN1F	AX		C	Connector (2461−12B)	[CN1]
59	0CGiPAAD2CN4F	AQ		C	Connector (5271−02A)	[CN4]

16 AC power supply PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
60	QCGiPAAD2SW1F	BB		B	Switch (C1350AT) [SW1]
61	QCGiPAAD2iNLF	BF		C	Inlet (AC-P03CS05)
⚠ 62	QCGiPAAD2F1F/	AT		A	Fuse (19194 4A) [F1]
⚠ 63	QCGiPAAD2F2F/	AT		A	Fuse (MT4377A 10A) [F2]
⚠ 64	QCGiPAAD2F3F/	AT		A	Fuse (19194 2A) [F3]
65	QCGiPAAD2SWPF	AX		C	Switch panel
66	QCGiPAAD2HSAF	AX		C	Heat sink A
67	QCGiPAAD2HSBF	AX		C	Heat sink B
68	QCGiPAAD2HSCF	AX		C	Heat sink C
69	QCGiPAAD2HSDF	AT		C	Heat sink D
70	QCGiPAAD2FHOF	AK		C	Fuse holder (F208P)
71	QCGiPAAD2FHOF	AK		C	Fuse holder (F214P)
72	QCGiPAAD2GHF/	AQ		C	Harness
73	QCGiPAAD2C21F	AK		C	Capacitor (1000V 102) [C21,22,23]
74	QCGiPAAD2ANGF	AX		C	Angle [C42]
75	QCGiPAAD2CN5F	AX		C	Conector harness [CN5]
76	QCGiPAAD2L5F/	AK		C	Coil (BF40-3.5) [L5~7,11,12]
77	QCGiPAAD2R16F	AK		C	Resistor (1/2W 47Ω) [R16]
78	QCGiPAAD2R43F	AK		C	Resistor (1/8W 3.3KΩ) [R43]
79	QCGiPAAD2VR1F	AQ		B	Valume (2KΩ) [VR1]
80	QCGiPAAD2L8F/	AX		C	Earth coil (SLL-10) [L8]
81	QCGiPAAD2L9F/	AQ		C	Coil (2673-000701) [L9]
82	QCGiPAAD2L10F	AK		C	Coil (2673-000301) [L10]
	(Unit)				
901	RDENT2044SCZZ	BY		E	AC power supply PWB unit

17 CCD board

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	VCCCTQ1HH5R0C	AA		C	Capacitor (50WV 5.0pF) [C1]
2	VCSAPJ1AE336M	AF		C	Capacitor (10WV 33μF) [C2]
3	VCKYTQ1EF104Z	AA		C	Capacitor (25WV 0.1μF) [C3]
4	VCKYTQ1EF104Z	AA		C	Capacitor (25WV 0.1μF) [C4]
5	VCEAEU1CW226M	AA		C	Capacitor (16WV 22μF) [C5]
6	VCKYTQ1EF104Z	AA		C	Capacitor (25WV 0.1μF) [C6]
7	VCEAEU1CW226M	AA		C	Capacitor (16WV 22μF) [C7]
8	QCNW-3653SCZZ	AL		C	CCD cable [CNC]
9	VHiUPD35H73-1	AZ		B	IC (UPD35H73) [IC1]
10	VHiLM318M//-1	AN		B	IC (LM318M) [IC2]
11	VRS-TP2BD000J	AA		C	Resistor (1/8W 0Ω ±5%) [J3]
12	VRS-TP2BD000J	AA		C	Resistor (1/8W 0Ω ±5%) [J4]
13	VS2SC2412KS-1	AB		B	Transistor (2SC2412KS) [Q1]
14	VRS-TP2BD682J	AA		C	Resistor (1/8W 6.8KΩ ±5%) [R1]
15	VRS-TP2BD102J	AA		C	Resistor (1/8W 1.0KΩ ±5%) [R2]
16	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%) [R3]
17	VRS-TP2BD472J	AA		C	Resistor (1/8W 4.7KΩ ±5%) [R4]
18	VRS-TP2BD222J	AA		C	Resistor (1/8W 2.2KΩ ±5%) [R5]
	(Unit)				
901	CPWBF2439SC01	BD		E	CCD board

18 I/F PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	QCNCM2353SC0i	AB		C	Connector (9pin) [CNFS]
2	QCNCM2353SC0B	AA		B	Connector (2pin) [CNLED]
3	QCNCM2353SC0E	AB		C	Connector (5pin) [CNPM]
4	QCNCM2353SC1J	AB		C	Connector (10pin) [CNSCN]
5	QCNCM7014SC0B	AD		B	Connector (2pin) [CNSNS]
6	QCNCM2353SC0F	AB		C	Connector (6pin) [CNTM]
7	VHiTD62064BPi	AK		B	IC (TD62064BP) [IC1]
8	VHViCPN20//-1	AD		B	IC protector (ICP-N20) [ICP]
9	VRD-RB2EY000J	AA		C	Resistor (1/4W 0Ω ±5%) [JP1]
10	VRD-RB2EY000J	AA		C	Resistor (1/4W 0Ω ±5%) [JP2]
11	VRD-RB2EY000J	AA		C	Resistor (1/4W 0Ω ±5%) [JP3]
12	VRD-RB2EY000J	AA		C	Resistor (1/4W 0Ω ±5%) [JP4]
13	VS2SA950-Y/-1	AC		B	Transistor (2SA950-Y) [Q1]
14	VRS-HT3AA560J	AA		C	Resistor (1W 56Ω ±5%) [R1]
15	VRS-HT3AA560J	AA		C	Resistor (1W 56Ω ±5%) [R2]
16	VRD-RC2EY221J	AA		C	Resistor (1/4W 220Ω ±5%) [R3]
17	VRD-RC2EY221J	AA		C	Resistor (1/4W 220Ω ±5%) [R4]
18	VRD-RC2EY221J	AA		C	Resistor (1/4W 220Ω ±5%) [R5]
19	VRD-RC2EY562J	AA		C	Resistor (1/4W 5.6KΩ ±5%) [R6]

18 I/F PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
20	VRD-RB2EY472J	AA		C	Resistor (1/4W 4.7KΩ ±5%) [R7]
21	VRD-RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%) [R8]
	(Unit)				
901	CPWBF2507SC01	AT		E	I/F PWB unit

19 Division PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	QCNCM0539FCZZ	AE		C	Connector
2	QCNCM1069AC0D	AC		C	Connector (4pin)
3	QCNCM2353SC0E	AB		C	Connector (5pin)
4	QCNCM5031BCZZ	AB		B	Connector (3pin)
5	QCNCM5058BCZZ	AB		B	Connector (2pin)
6	QCNCM6865RC0D	AB		C	Connector (4pin)
7	QCNCM6865RC1B	AD		C	Connector (12pin)
⚠ 8	QFS-C1025CCZZ	AF		A	Fuse (T3.15A 250V)
9	QFSHA1002CCZZ	AB		C	Holder,fuse (SN-3E)
10	QPiN-2005SCZZ	AA		C	Pin (RT-01T-1.3B)
	(Unit)				
901	CPWBF2338SC02	AV		E	Division PWB unit

20 Solenoid PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	LPLTM3525FCZZ	AB		C	PWB earth plate
2	QCNCM0538FCZZ	AC		C	Connector (SB7-PH-K-S)
3	RPLU-0229FCZZ	AN		B	PF solenoid
4	RPLU-0230FCZZ	AP		B	PS solenoid
5	VHPGP1S53//-1	AF		B	Photo transistor (GP1S53)
6	VRS-PT3AB911J	AA		C	Resistor (1W 910Ω ±5%)
7	XHPSD30P060000	AA		C	Screw (3×6)
	(Unit)				
901	CPWBF0778FC31	AY		E	Solenoid PWB unit

21 Mother board unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	DHAI-1607FCZZ	AH		C	MB harness 1
2	DHAI-1608FCZZ	AH		C	MB harness 2
3	QCNCM0344FCZZ	AF		C	Connector
4	QCNCW0345FCZZ	AH		C	Connector
	(Unit)				
901	CPWBF0773FC31	AW		E	Mother board unit

22 High tension PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	LPLTM3195FCZZ	AD		C	Cassette size plate
2	QSLP-0011GCZZ	AC	N	C	Fuse terminal B
	(Unit)				
901	CPWBF0774FC31	BM		E	High tension PWB unit (200V series)

23 Service tool

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	CPWBN2448SC02	BW		E	Cont.board extension board unit (Include №4~22)
2	UKÖGM2011SCZA	BN		D	Optical adjustment plate
3	CPNLC0185FCS1	BL		D	Key panel for printer diagnostics
4	LANGT2728SCZZ	AF		C	Cont.PWB angle
5	PSPAN2344RCZZ	AB		C	Spacer (MPS06)

23 Service tool

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
6	QCNCM2353SC0H	AB		C	Connector(8pin) [CN103,107]
7	QCNCM2353SC1B	AB		C	Connector(12pin) [CN112,114]
8	QCNCM2353SC1D	AC		C	Connector(14pin) [CN111,113]
9	QCNCM2353SC1J	AB		C	Connector(10pin) [CN104,108]
10	QCNCM2389SC2J	AE		C	Connector(20pin) [CN109,201]
11	QCNCM2389SC3J	AE		C	Connector(30pin) [CN105,110]
12	QCNCM2408SC2J	AF		C	Connector(20pin) [CN202]
13	QCNCW0341FCZZ	AG		C	Connector (PCN13−20) [CN101]
14	QCNW−3497SCZZ	AM		C	Extension cable 1
15	QCNW−3499SCZZ	AP		C	Extension cable 3
16	QCNW−3501SCZZ	AK		C	Extension cable 5
17	QCNW−3533SCZZ	AM		C	Extension cable 4
18	QCNW−3666SCZZ	AP		C	Extension cable 6
19	QCNW−3667SCZZ	AN		C	Extension cable 7
20	QPWBN2350SCZZ	AT		C	Extension board B without parts
21	QPWBN2448SCZZ	BS		C	Extension board A without parts
22	XBPSD30P06000	AA		C	Screw (3×6)

Index

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
[C]					
CBOX-0065FC01	7- 22	AW		C	
CCABA2186SC02	1- 59	AS		D	
CCABC2189SC07	1- 41	AY	N	D	
CCASZ0184FC31	8-101	AP		C	
CCLEZ0106FC01	11- 13	AE		C	
CCNW-3629SC01	5- 4	AS		C	
CCOVP0947FC51	7- 14	AN		C	
CCOVP0948FC31	6- 14	AR		C	
CCOVQ0907FC02	9- 7	AP		C	
CDAiU0359FC01	6- 13	AW		C	
CDTCT0075FC01	9- 8	AR		E	
CDTCT0078FC01	3- 4	AM		E	
CFRM-0548FC01	7- 42	AW		C	
CFRM-0552FCG1	6- 61	AR		C	
CGiDH1057FC01	6- 38	AN		C	
CGiDH1058FC01	6- 33	AM		C	
CGiDH1059FC01	8- 10	AQ		E	
CGiDH1059FC31	2- 10	BN		E	
//	8-901	BN		E	
CGiDM1064FC31	2- 9	AS		C	
CHLDZ0919FC51	7- 67	AK		C	
CMOTN0565FC31	7- 61	BF		E	
CPLTM2496SC02	7- 31	AU		C	
CPLTM3193FCS1	7- 57	AL		C	
CPNLC0185FCS1	23- 3	BL		D	
CPWBF0772FC31	7- 16	BL		E	
//	15-901	BL		E	
CPWBF0773FC31	7- 23	AW		E	
//	21-901	AW		E	
CPWBF0774FC31	7- 18	BM		E	
//	22-901	BM		E	
CPWBF0778FC31	8- 43	AY		E	
//	20-901	AY		E	
CPWBF2338SC02	6- 12	AV		E	
//	19-901	AV		E	
CPWBF2439SC01	5- 42	BD		E	
//	17-901	BD		E	
CPWBF2507SC01	2- 28	AT		E	
//	18-901	AT		E	
CPWBN2448SC02	23- 1	BW		E	
CPWBN2471SC01	2- 16	BX		E	
//	13-901	BX		E	
CPWBN2471SC02	2- 16	BX		E	
//	13-901	BX		E	
CPWBS2348SC08	7- 90	BS	N	E	
//	14-901	BS	N	E	
CPWBX2492SC32	7- 89	CV	N	E	
//	12-901	CV	N	E	
CSPRB1502FCS1	2- 7	AW		C	
//	7- 1	AW		C	
CTHM-0011FC01	9- 10	AK		B	
[D]					
DHAi-1605FCZZ	9- 11	AC		C	
DHAi-1606FCZZ	9- 9	AC		C	
DHAi-1607FCZZ	21- 1	AH		C	
DHAi-1608FCZZ	21- 2	AH		C	
DHAi-1612FCZZ	7- 68	AS		C	
DHAi-1626FCZZ	9- 4	AA		C	
DHAi-1675FCZZ	6- 51	AB		C	
DHAi-1678FCZZ	6- 50	AD		C	
DPNLC2034SCZA	4- 40	BU	N	E	
DPNLC2034SCZB	4- 40	BU	N	E	
DUNTK4979SCZZ	6- 1	CF		E	
DUNTW6244FC15	2- 3	BN		E	
//	9-901	BN		E	
DWiR-0466CSZZ	8- 66	BG		C	
[G]					
GCABA2187SCZB	1- 23	AW		D	
GCABB2185SCZE	1- 57	AU		D	
GCABD2190SCZA	3- 9	AT		C	
GCABE2191SCZZ	1- 55	AL		C	
GCABF2192SCZA	1- 50	AU		C	
GCASP0145FCZZ	10- 11	AQ		D	
GCOVA2283SCZZ	1- 72	AV		C	
GCOVH2284SCZC	2- 15	AH		C	
GLEGG0040FCZZ	7- 17	AB		D	
[L]					
LANGT2723SCZZ	3- 13	AD		C	
LANGT2724SCZZ	1- 63	AF		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
LANGT2728SCZZ	7- 91	AF		C	
//	12-377	AF		C	
//	23- 4	AF		C	
LANGT2752SCZA	5- 29	AG		C	
LANGT2753SCZZ	5- 52	AL		C	
LBNDJ0043FCZZ	4- 37	AA		C	
//	6- 77	AA		C	
LBNDJ2003SCZZ	7- 74	AA		C	
LBNDJ2006SCZZ	2- 33	AA		C	
//	4- 36	AA		C	
//	5- 65	AA		C	
LBNDJ2007SCZZ	7-105	AA		C	
LBOSZ1031FCZZ	8- 35	AC		C	
LBSHC0095FCZZ	7- 72	AB		C	
LBSHC2051SCZZ	2- 42	AD		C	
LBSHC7004SCZZ	6- 89	AB		C	
LBSHZ2029SCZZ	2- 19	AB		C	
LBSHZ2049SCZZ	7- 86	AC		C	
LDAiU0358FCZZ	7- 24	AT		C	
LDAiU0428FCZZ	10- 8	AB		C	
LFRM-0550FCZZ	7- 27	AR		C	
LFRM-0551FCSZ	6- 46	AR		C	
LFRM-2119SCZA	5- 56	AW		C	
LHLDF2120SCZZ	7- 75	AA		C	
LHLDW0595FCZZ	6- 88	AC		C	
//	7- 76	AC		C	
LHLDW0734FCZZ	2- 11	AA		C	
//	6- 48	AA		C	
//	7- 10	AA		C	
LHLDW1006FCZZ	6- 71	AA		C	
LHLDW1009ACZZ	6- 42	AA		C	
LHLDW1201CCZZ	5- 22	AA		C	
LHLDW2020SCZZ	1- 77	AB		C	
//	3- 18	AB		C	
//	4- 38	AB		C	
LHLDW2087SCZZ	2- 30	AA		C	
LHLDW2126SCZZ	2- 40	AB		C	
LHLDW2130SCZZ	3- 21	AC		C	
LHLDW2136SCZZ	2- 18	AC		C	
LHLDW5022BCZZ	5- 40	AA		C	
LHLDZ0917FCZ1	7- 56	AE		C	
LHLDZ0918FCZZ	7- 5	AE		C	
LHLDZ0948FCZZ	6- 10	AB		C	
LPiNS0133FCZZ	8- 18	AA		C	
LPLTG2449SCZZ	4- 24	AD		C	
LPLTM0953FCZZ	1- 73	AA		C	
LPLTM2489SCZZ	1- 67	AK		C	
LPLTM2493SCZZ	7- 87	AE		C	
LPLTM2494SCZZ	6- 80	AG		C	
LPLTM2497SCZC	2- 23	AQ		C	
LPLTM2498SCZZ	7- 93	AP		C	
LPLTM2508SCZZ	6- 78	AH		C	
LPLTM2541SCZZ	5- 36	AN		C	
LPLTM2542SCZZ	2- 29	AU		C	
LPLTM2543SCZZ	4- 15	AE		C	
LPLTM2544SCZZ	5- 21	AH		C	
LPLTM2562SCZZ	4- 44	AD		C	
LPLTM3036FCZ1	10- 2	AM		C	
LPLTM3039FCZZ	9- 24	AK		C	
LPLTM3040FCZZ	9- 23	AD		C	
LPLTM3195FCZZ	22- 1	AD		C	
LPLTM3437FCZZ	6- 54	AF		C	
LPLTM3520FCZZ	6- 66	AG		C	
LPLTM3525FCZZ	8- 49	AB		C	
//	20- 1	AB		C	
LPLTM3543FCZZ	10- 14	AD		C	
LPLTP2396SCZA	1- 14	AC		C	
LPLTP2490SCZZ	11- 16	AS		C	
LPLTP2491SCZA	11- 18	AN		C	
LPLTP2512SCZZ	5- 43	AB		C	
LPLTP2545SCZA	11- 102	AE		C	
LPLTP2545SCZZ	11- 102	AE		C	
LPLTP3035FCZZ	10- 6	AF		C	
LSTPP0116FCZZ	9- 19	AA		C	
LSTPP0161FCZZ	10- 4	AB		C	
LSTPP0209FCZZ	6- 39	AB		C	
LX-BZ0266FCZZ	2- 12	AB		C	
LX-BZ0375FCZZ	2- 35	AA		C	
LX-BZ0376FCZZ	1- 48	AA		C	
//	2- 14	AA		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
LX-BZ0376FCZZ	4- 25	AA		C	
//	6- 25	AA		C	
//	7- 96	AA		C	
LX-BZ0413FCZZ	2- 13	AB		C	
LX-BZ0487FCZZ	9- 21	AA		C	
LX-BZ1160CCZZ	5- 50	AA		C	
LX-BZ2088SCZZ	4- 43	AB		C	
LX-BZ2129SCZZ	5- 49	AB		C	
LX-BZ2139SCZZ	7- 25	AA		C	
LX-BZ2145SCZZ	1- 76	AA		C	
LX-BZ2146SCZZ	5- 41	AA		C	
LX-BZ2155SCZZ	4- 23	AB		C	
LX-BZ2160SCZZ	5- 9	AC		C	
LX-RZ1044HCZZ	7- 52	AA		C	
LX-WZ0048FCZZ	5- 61	AA		C	
LX-WZ0269FCZZ	8- 51	AC		C	
LX-WZ0390FCZZ	7- 98	AB		D	
LX-WZ1003HCZZ	8- 52	AA		C	
LX-WZ2019SCZZ	8- 13	AA		C	
LX-WZ2020SCZZ	1- 18	AB		C	
LX-WZ2023SCZZ	1- 15	AA		C	
LX-WZ2025SCZZ	5- 15	AB		C	
LX-WZ5002BCZZ	7- 40	AA		C	
LX-WZ5028BCZZ	8- 13	AA		C	
[M]					
MLEVF0469FCZZ	9- 28	AD		C	
MLEVF0494FCZZ	9- 16	AD		C	
MLEVP0465FCZZ	7- 37	AC		C	
MLEVP0466FCZZ	8- 22	AD		C	
MLEVP0467FCZZ	8- 15	AC		C	
MLEVP2104SCZZ	7- 92	AC		C	
MSPRC1145FCZZ	10- 5	AA		C	
MSPRC1496FCZZ	7- 36	AA		C	
MSPRC1499FCZZ	6- 41	AA		C	
MSPRC1505FCZZ	10- 9	AC		C	
MSPRC1506FCZZ	8- 3	AA		C	
MSPRC1509FCZZ	3- 16	AA		C	
MSPRC1511FCZZ	9- 22	AA		C	
MSPRC1512FCZZ	9- 13	AA		C	
MSPRC1580FCZZ	8- 33	AD		C	
MSPRC1581FCZZ	9- 15	AB		C	
MSPRC1695FCZZ	8- 24	AB		C	
MSPRC1783FCZZ	7- 33	AA		C	
MSPRC2427SCZZ	1- 64	AA		C	
MSPRC2428SCZZ	1- 19	AA		C	
MSPRC2431SCZA	3- 22	AC		C	
MSPRC2482SCZA	5- 20	AB		C	
MSPRC2522SCZZ	5- 60	AA		C	
MSPRD2488SCZZ	5- 32	AB		C	
MSPRP1497FCZZ	7- 32	AD		C	
MSPRP1510FCZZ	9- 1	AD		C	
MSPRP1592FCZZ	7- 30	AD		C	
MSPRP2402SCZZ	5- 2	AC		C	
MSPRP2403SCZZ	4- 30	AB		C	
MSPRP2435SCZZ	5- 46	AB		C	
MSPRP2528SCZZ	3- 23	AC		C	
MSPRT1503FCZ1	6- 31	AA		C	
MSPRT1504FCZZ	6- 84	AA		C	
MSPRT1708FCZZ	6- 37	AA		C	
MSPRT1709FCZZ	6- 69	AA		C	
MSPRT2481SCZZ	4- 16	AA		C	
MSPRT2499SCZZ	4- 45	AA		C	
[N]					
NBLTH0117FCZZ	7- 62	AD		C	
NBLTH0118FCZZ	7- 50	AD		C	
NBRGC0311FCZZ	8- 25	AC		C	
NBRGC0343FCZZ	3- 8	AB		C	
NBRGP0259FCZZ	9- 18	AE		C	
NBRGP0266FCZZ	8- 12	AA		C	
NBRGP0331FCZ1	9- 25	AD		C	
NBRGP0386FCZZ	9- 31	AK		C	
NBRGY2079SCZA	4- 34	AB		C	
//	5- 31	AB		C	
NBRGY2080SCZA	4- 18	AB		C	
NBRGY2095SCZZ	5- 58	AB		C	
NBRGY2101SCZZ	5- 7	AB		C	
NBRGY2117SCZZ	5- 16	AB		C	
NBRGY2121SCZZ	5- 13	AB		C	
NFANP0027FCZZ	3- 11	AW		B	
NGERH0401FCZZ	9- 30	AC		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
NGERH0589FCZZ	7- 63	AC		C	
NGERH0590FCZZ	7- 45	AD		C	
NGERH0591FCZZ	7- 46	AD		C	
NGERH0592FCZZ	7- 49	AC		C	
NGERH0593FCZ1	7- 58	AB		C	
NGERH0594FCZZ	7- 43	AC		C	
NGERH0595FCZZ	7- 41	AC		C	
NGERH0596FCZZ	7- 59	AD		C	
NGERH0597FCZZ	7- 48	AC		C	
NGERH0598FCZZ	7- 51	AB		C	
NGERH0599FCZZ	7- 64	AB		C	
NGERH0600FCZZ	8- 27	AB		C	
NGERH0601FCZZ	8- 29	AB		C	
NGERH0602FCZZ	8- 32	AF		C	
NGERH0603FCZZ	8- 31	AB		C	
NGERH0604FCZZ	8- 48	AE		C	
NGERH0606FCZZ	7- 53	AC		C	
NGERH2092SCZZ	5- 39	AB		C	
NGERH2121SCZZ	5- 37	AB		C	
NGERH2125SCZZ	1- 20	AB		C	
NGERH2136SCZZ	5- 34	AC		C	
NGERH2140SCZZ	5- 14	AB		C	
NGERH2143SCZZ	5- 10	AC		C	
NGERH2148SCZZ	5- 11	AB		C	
NGERH2176SCZA	5- 38	AC		C	
NGERH2177SCZZ	4- 35	AC		C	
//	5- 33	AC		C	
NGERP2157SCZZ	1- 16	AC		C	
NPLYZ0174FCZZ	7- 66	AB		C	
NPLYZ0182FCZZ	3- 7	AB		C	
NRÖLi0692FCZ1	9- 26	AV		C	
NRÖLM0711FCZZ	5- 12	AB		C	
NRÖLP0591FCZZ	3- 17	AA		C	
//	7- 34	AA		C	
NRÖLP0686FCZ1	6- 36	AB		C	
NRÖLP0687FCZZ	8- 16	AS		C	
NRÖLP0688FCZZ	8- 17	AP		C	
NRÖLP0689FCZZ	8- 14	AN		C	
NRÖLP0690FCSZ	3- 2	AP		C	
NRÖLP0729FCZZ	7- 29	AB		C	
NRÖLP2194XHZZ	4- 32	AC		C	
//	5- 18	AC		C	
NRÖLR2233SCZZ	5- 24	AK		C	
NRÖLR2234SCZZ	4- 17	AL		C	
NRÖLR2244SCZZ	5- 30	AN		C	
NRÖLR2245SCZZ	5- 8	AP		C	
NRÖLT0693FCZZ	9- 27	AW		C	
NSFTZ1205FCZ1	6- 35	AF		C	
NSFTZ1480FCZZ	6- 56	AB		C	
NSFTZ2228SCZZ	5- 19	AC		C	
NSFTZ2231SCZZ	1- 65	AD		C	
NSFTZ2236SCZZ	5- 25	AG		C	
NSFTZ2237SCZZ	5- 27	AG		C	
NSFTZ2238SCZZ	4- 31	AD		C	
NSFTZ2239SCZZ	4- 46	AC		C	
[P]					
PBRS-2019SCZZ	4- 29	AF		C	
PBRS-2032SCZZ	3- 1	AG		C	
PCAPH0032FCZZ	7- 79	AC		C	
PCASZ0184FCZZ	8- 6	AF		C	
PCASZ0185FCZZ	8- 9	AG		C	
PCLC-2021SCZZ	5- 26	AH		C	
PCÖVP0946FCZ1	9- 3	AF		C	
PCÖVP0970FCSZ	7- 73	AF		C	
PCÖVP0977FCZZ	8- 46	AE		C	
PCÖVP0979FCZZ	3- 19	AC		C	
PFiLZ2052SCZZ	3- 10	AL		C	
PGiDH1060FCZZ	8- 21	AG		C	
PGiDH1062FCZZ	8- 23	AG		C	
PGiDH2347SCZZ	4- 27	AW		C	
PGiDM1055FCZZ	6- 40	AC		C	
PGiDM1056FCZ2	6- 27	AD		C	
PGiDM1061FCZZ	8- 20	AG		C	
PGiDM1063FCZ1	8- 4	AE		C	
PGiDM2303SCZZ	1- 25	AD		C	
PGiDM2304SCZZ	1- 24	AD		C	
PGiDM2305SCZA	3- 15	AH		C	
PGiDM2332SCZA	5- 6	AT		C	
PGLSP2040SCZZ	5- 5	AG		B	
PHÖG-2062SCZZ	7- 70	AC		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
PHOG-2066SC15	4- 47	AA		C	
PHOG-2066SC75	6- 82	AC		C	
PHOP-2062SCZA	11- 19	AG		C	
PLNS-2035SCZZ	5- 44	BA		B	
PMAG-0021FCZZ	1- 74	AF		C	
PMiR-2040SCZZ	5- 48	AN		C	
PMiR-2041SCZZ	5- 47	AM		C	
PMiR-2042SCZZ	5- 53	AL		C	
PMLT-0791FCZZ	6- 70	AB		C	
PMLT-0796FCZZ	6- 85	AC		C	
PPiPP0108FCZ1	8- 47	AB		C	
PPiPP0121FCZZ	8- 34	AC		C	
PRNGP0025FCZZ	7- 39	AA		C	
//	8- 11	AA		C	
PRNGP0033FCZZ	3- 6	AA		C	
PSHEP2299FCZZ	6- 34	AB		C	
PSHEP2350FCZZ	8- 50	AB		C	
PSHEP2443FCZZ	6- 53	AB		C	
PSHEP2448FCZZ	8- 53	AC		C	
PSHEP2535FCZZ	7- 85	AC		C	
PSHEP2555FCZZ	8- 44	AE		C	
PSHEP2561FCZZ	6- 74	AC		C	
PSHEP2566FCZZ	7- 80	AD		C	
PSHEP2581FCZZ	7- 82	AF		C	
PSHEP2582FCZZ	7- 83	AD		C	
PSHEP2597FCZZ	7- 84	AC		C	
PSHEP2607FCZZ	6- 83	AB		C	
PSHEZ0053GCZZ	10- 1	AA		C	
PSHEZ2450FCZZ	8- 5	AH		C	
PSHEZ2493SCZZ	11- 15	AK		C	
PSHEZ2512SCZZ	3- 5	AB		C	
PSHEZ2517SCZA	6- 76	AD		C	
PSHEZ2518SCZZ	6- 75	AC		C	
PSHEZ2543SCZZ	6- 81	AL		C	
PSHEZ2642SCZZ	3- 24	AB		C	
PSPAK2331RCZZ	7- 11	AA		C	
PSPAN1007ACZZ	6- 28	AB		C	
PSPAN2344RCZZ	12- 378	AB		C	
//	23- 5	AB		C	
PTME-0188FCZZ	7- 38	AL		C	
PTME-0189FCZZ	10- 7	AF		C	
PTME-0190FCZZ	10- 10	AE		C	
PTME-0191FCZZ	9- 12	AF		C	
PTPEZ2035SCZZ	1- 28	AC		C	
PTUBG0038FCZZ	9- 32	AA		C	
PWiR-2015SCZZ	1- 26	AC		C	
[Q]					
QACCV6621QCZZ	11- 6	AT		B	
QCNCM0333FCZZ	9- 20	AD		C	
QCNCM0339FCZZ	14- 32	AC		C	
//	14- 33	AC		C	
QCNCM0340FCZZ	14- 31	AC		C	
QCNCM0344FCZZ	21- 3	AF		C	
QCNCM0538FCZZ	20- 2	AC		C	
QCNCM0539FCZZ	19- 1	AE		C	
QCNCM0540FCZZ	14- 36	AD		C	
QCNCM0541FCZZ	14- 35	AD		C	
QCNCM0542FCZZ	14- 34	AC		C	
QCNCM1058AC04	13- 182	AB		C	
QCNCM1058AC06	13- 181	AC		C	
//	13- 185	AC		C	
//	13- 190	AC		C	
//	13- 191	AC		C	
//	13- 197	AC		C	
QCNCM1058AC08	13- 189	AB		C	
//	13- 193	AB		C	
QCNCM1060AC03	13- 183	AB		B	
//	13- 184	AB		B	
//	13- 186	AB		B	
//	13- 188	AB		B	
//	13- 192	AB		B	
//	13- 194	AB		B	
//	13- 195	AB		B	
//	13- 196	AB		B	
//	13- 198	AB		B	
QCNCM1069AC0D	19- 2	AC		C	
QCNCM2346SC1F	12- 89	AF		C	
QCNCM2346SC2J	12- 88	AG		C	
QCNCM2353SC0B	18- 2	AA		B	
QCNCM2353SC0E	18- 3	AB		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
QCNCM2353SC0E	19- 3	AB		C	
QCNCM2353SC0F	18- 6	AB		C	
QCNCM2353SC0H	12- 87	AB		C	
//	23- 6	AB		C	
QCNCM2353SC0i	18- 1	AB		C	
QCNCM2353SC1B	12- 93	AB		C	
//	23- 7	AB		C	
QCNCM2353SC1D	12- 92	AC		C	
//	23- 8	AC		C	
QCNCM2353SC1J	12- 94	AB		C	
//	18- 4	AB		C	
//	23- 9	AB		C	
QCNCM2389SC2J	23- 10	AE		C	
QCNCM2389SC3J	12- 90	AE		C	
//	13- 50	AE		C	
//	23- 11	AE		C	
QCNCM2393SC0F	13- 187	AD		C	
QCNCM2408SC2J	23- 12	AF		C	
QCNCM5031BCZZ	19- 4	AB		B	
QCNCM5058BCZZ	19- 5	AB		B	
QCNCM6865RC0D	19- 6	AB		C	
QCNCM6865RC1B	19- 7	AD		C	
QCNCM7014SC0B	18- 5	AD		B	
QCNCW0341FCZZ	12- 91	AG		C	
//	23- 13	AG		C	
QCNCW0345FCZZ	21- 4	AH		C	
QCNCW1057ACZZ	13- 180	AB		C	
QCNCW2379SC0F	13- 77	AH		C	
QCNW-3490SCZZ	2- 31	AL		C	
//	7- 101	AL		C	
QCNW-3491SCZZ	2- 32	AF		C	
QCNW-3493SCZZ	13- 211	AB		C	
QCNW-3497SCZZ	23- 14	AM		C	
QCNW-3499SCZZ	23- 15	AP		C	
QCNW-3501SCZZ	23- 16	AK		C	
QCNW-3515SCZZ	4- 33	AE		C	
QCNW-3533SCZZ	23- 17	AM		C	
QCNW-3613SCZZ	5- 54	AD		C	
QCNW-3649SCZA	2- 21	AV		C	
//	7- 100	AV		C	
QCNW-3653SCZZ	7- 102	AL		C	
//	17- 8	AL		C	
QCNW-3654SCZZ	4- 42	AN		C	
//	7- 103	AN		C	
QCNW-3655SCZZ	4- 41	AP		C	
//	7- 104	AP		C	
QCNW-3666SCZZ	23- 18	AP		C	
QCNW-3667SCZZ	23- 19	AN		C	
QCNW-3671SCZZ	2- 38	AK		C	
QCNW-3708SCZZ	4- 39	AD		C	
QCNW-3767SCZZ	2- 27	AK		C	
QCNW-3812SCZZ	5- 64	AC		C	
QCNW-3814SCZZ	5- 23	AC		C	
QCNW-3821SCZZ	1- 83	AD		C	
QEARP0036FCZZ	7- 55	AC		C	
QFS-C1025CCZZ	19- 8	AF		A	
QFSHA1002CCZZ	19- 9	AB		C	
QPiN-2005SCZZ	13- 99	AA		C	
//	19- 10	AA		C	
QPWBN2350SCZZ	23- 20	AT		C	
QPWBN2448SCZZ	23- 21	BS		C	
QSLP-0011GCZZ	22- 2	AC	N	C	
QSLP-0127FCZ1	6- 11	AC		C	
QSOCZ2042SC32	12- 117	AE		C	
//	12- 120	AE		C	
QSOCZ6428ACZZ	12- 105	AE		C	
QSOCZ6440ACZZ	12- 108	AG		C	
QSW-M2162SCZA	2- 25	AG		B	
QSW-M2162SCZZ	2- 41	AG		C	
QSW-M2175SCZZ	5- 63	AD		B	
QSW-Z0409FCZZ	6- 32	AR		B	
QSW-Z1067HCZZ	12- 368	AF		B	
[R]					
RALMB2008SCZZ	12- 2	AG		B	
RATTN2012SCZZ	13- 2	AL		C	
RC-EZ106NSC1C	13- 12	AB		C	
//	13- 31	AB		C	
RC-EZ107VSC1C	13- 10	AC		C	
RC-QF222FSC1H	13- 20	AE		C	
//	13- 21	AE		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
RC-QF222FSC1H	13- 22	AE		C	
//	13- 23	AE		C	
RCiLC2086SCZZ	13- 199	AQ		C	
RCiLF2080SCZZ	13- 75	AF		C	
RCiLF6971KCZZ	13- 76	AH		C	
RCORF2013SCZZ	13- 73	AH		C	
//	13- 74	AH		C	
RCORF2023SCZZ	7- 106	AH		C	
RCORF2034SCZZ	7- 107	AG		C	
RCORF2048SCZZ	14- 74	AG	N	C	
RCORF5001SCZZ	2- 39	AG		C	
RCORF6662RCZZ	5- 62	AK		C	
RCRSP1012HCZZ	14- 145	AK		B	
RCRSP6635RCZZ	12- 374	AD		B	
RCRSQ2054SCZZ	12- 373	AT		B	
RCRSQ2060SCZZ	14- 144	AH		B	
RCRSZ2051SCZZ	12- 372	AD		B	
RCRSZ7007SCZZ	12- 371	AD		B	
//	12- 375	AD		B	
RDENT2044SCZZ	2- 4	BY		E	
//	16-901	BY		E	
RFiLN1004AC13	14- 41	AC		C	
RLMPU0408FCZZ	9- 29	AX		B	
RMOTZ2086SCZZ	5- 57	AW		B	
RPLU-0229FCZZ	8- 36	AN		B	
//	20- 3	AN		B	
RPLU-0230FCZZ	8- 45	AP		B	
//	20- 4	AP		B	
RRLYZ2113QCZZ	13- 179	AV		B	
RRLYZ3417QCN1	13- 178	AU		B	
RTRNZ2116SCZZ	13- 200	AU		B	
RVR-M1411QCZZ	13- 205	AM		B	
//	13- 206	AM		B	
[S]					
SPAKA3097SCZZ	11- 20	AT		D	
SPAKA3098SCZZ	11- 11	AE		D	
SPAKA3100SCZZ	11- 17	AG		D	
SPAKA3303SCZZ	11- 10	AS		D	
SPAKA3304SCZA	11- 8	AR		D	
SPAKC3290SCZZ	11- 1	AV	N	D	
SPAKP2827SCZZ	11- 9	AL		D	
SSAKA0003HCZZ	11- 14	AA		D	
SSAKA3001CCZZ	11- 5	AA		D	
[T]					
TCAUH0839FCZZ	7- 9	AA		D	
TCAUS0003GCZZ	1- 81	AB		D	
//	6- 90	AB		D	
TCAUS6668RCZZ	1- 49	AA		D	
TiNSE3056SCZZ	11- 15	AY	N	D	
TiNSG3055SCZZ	11- 15	AY	N	D	
TLABG2921SCZZ	1- 85	AB		D	
TLABH2215FCZZ	1- 82	AC		C	
TLABH2231FCZZ	1- 84	AC		D	
TLABH2400FCZZ	10- 13	AB		D	
TLABM2484SCZZ	11- 21	AE		D	
TLABM2498SCZZ	11- 21	AD		D	
TLABP3000SCZZ	14- 146	AA		D	
TLABZ2393FCZZ	10- 12	AA		D	
TLABZ2544FCZZ	10- 16	AB		D	
TLABZ2972SCZZ	1- 75	AC		D	
[U]					
UBATN2010SCZZ	12- 1	AN		B	
UBNDA1008CCZZ	11- 101	AA		C	
UKOGM2011SCZA	23- 2	BN		D	
[V]					
VCCCTQ1HH5R0C	17- 1	AA		C	
VCCCTV1HH101J	12- 39	AA		C	
//	12- 44	AA		C	
VCCCTV1HH121J	13- 35	AA		C	
VCCCTV1HH151J	13- 48	AA		C	
VCCCTV1HH220J	14- 2	AA		C	
//	14- 3	AA		C	
//	14- 8	AA		C	
//	14- 14	AA		C	
VCCCTV1HH300J	12- 11	AA		C	
//	12- 12	AA		C	
//	12- 13	AA		C	
//	12- 16	AA		C	
//	12- 68	AA		C	
//	12- 70	AA		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VCCCTV1HH471J	14- 15	AA		C	
//	14- 16	AA		C	
//	14- 17	AA		C	
//	14- 18	AA		C	
//	14- 19	AA		C	
//	14- 20	AA		C	
//	14- 26	AA		C	
//	14- 27	AA		C	
//	14- 28	AA		C	
//	14- 29	AA		C	
//	14- 30	AA		C	
VCEAEA1AW476M	14- 23	AB		C	
//	14- 24	AB		C	
//	14- 25	AB		C	
VCEAEU1CW226M	12- 7	AA		C	
//	12- 8	AA		C	
//	12- 9	AA		C	
//	17- 5	AA		C	
//	17- 7	AA		C	
VCEAEU1EW106M	12- 5	AA		C	
VCEAEU1HW105M	12- 6	AA		C	
VCEAJU1EW226M	13- 6	AB		C	
//	13- 7	AB		C	
//	13- 8	AB		C	
VCEAJU1HW105M	13- 11	AB		C	
VCFYJU2EA105K	13- 19	AE		C	
VCFYJU2EA205K	13- 13	AG		C	
VCFYJU2EA225K	13- 28	AG		C	
VCFYJU2EA473K	13- 29	AC		C	
VCFYJU2EA684K	13- 27	AD		C	
VCFYJU2GA223K	13- 15	AE		C	
//	13- 25	AE		C	
VCFYJU2GA474K	13- 9	AE		C	
//	13- 18	AE		C	
VCFYJU2JA103K	13- 14	AC		C	
//	13- 24	AC		C	
VCKYTQ1EF104Z	17- 3	AA		C	
//	17- 4	AA		C	
//	17- 6	AA		C	
VCKYTQ1EF334Z	12- 14	AB		C	
//	12- 19	AB		C	
VCKYTQ1HF104Z	14- 22	AA		C	
VCKYTQ1HF223Z	14- 1	AA		C	
//	14- 21	AA		C	
VCKYTV1EF104Z	12- 15	AA		C	
//	12- 17	AA		C	
//	12- 18	AA		C	
//	12- 20	AA		C	
//	12- 22	AA		C	
//	12- 23	AA		C	
//	12- 24	AA		C	
//	12- 26	AA		C	
//	12- 27	AA		C	
//	12- 28	AA		C	
//	12- 29	AA		C	
//	12- 30	AA		C	
//	12- 31	AA		C	
//	12- 32	AA		C	
//	12- 41	AA		C	
//	12- 43	AA		C	
//	12- 45	AA		C	
//	12- 46	AA		C	
//	12- 47	AA		C	
//	12- 48	AA		C	
//	12- 49	AA		C	
//	12- 50	AA		C	
//	12- 51	AA		C	
//	12- 53	AA		C	
//	12- 55	AA		C	
//	12- 57	AA		C	
//	12- 61	AA		C	
//	12- 63	AA		C	
//	12- 66	AA		C	
//	12- 67	AA		C	
//	12- 69	AA		C	
//	12- 74	AA		C	
//	12- 75	AA		C	
//	12- 77	AA		C	
//	12- 78	AA		C	
//	12- 79	AA		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VCKYTV1EF104Z	12- 80	AA		C	
//	13- 41	AA		C	
VCKYTV1HB102K	13- 46	AA		C	
VCKYTV1HB123K	13- 37	AA		C	
//	13- 45	AA		C	
VCKYTV1HB153K	13- 40	AA		C	
VCKYTV1HB222K	12- 58	AA		C	
//	12- 59	AA		C	
//	12- 60	AA		C	
//	12- 82	AA		C	
//	12- 83	AA		C	
//	12- 84	AA		C	
//	12- 85	AA		C	
VCKYTV1HB392K	13- 47	AA		C	
VCKYTV1HB472K	13- 39	AA		C	
//	13- 42	AA		C	
VCKYTV1HB681K	13- 36	AA		C	
//	13- 38	AA		C	
//	13- 44	AA		C	
VCKYTV1HB822K	13- 43	AA		C	
VCKYTV1HF103Z	12- 52	AA		C	
VCKYTV1HF223Z	12- 21	AA		C	
//	12- 25	AA		C	
//	12- 33	AA		C	
//	12- 34	AA		C	
//	12- 35	AA		C	
//	12- 36	AA		C	
//	12- 37	AA		C	
//	12- 38	AA		C	
//	12- 40	AA		C	
//	12- 56	AA		C	
//	12- 62	AA		C	
//	12- 64	AA		C	
//	12- 71	AA		C	
//	12- 72	AA		C	
//	12- 73	AA		C	
//	12- 81	AA		C	
//	12- 86	AA		C	
//	13- 32	AA		C	
//	13- 33	AA		C	
//	13- 34	AA		C	
VCKYTV1HR472K	14- 4	AA		C	
//	14- 5	AA		C	
//	14- 6	AA		C	
//	14- 7	AA		C	
//	14- 9	AA		C	
//	14- 10	AA		C	
//	14- 11	AA		C	
//	14- 12	AA		C	
//	14- 13	AA		C	
VCQYNU1HM102J	12- 3	AA		C	
//	12- 4	AA		C	
VCQYNU1HM102K	12- 10	AA		C	
VCQYNU1HM104K	13- 26	AB		C	
VCQYNU1HM333K	13- 16	AA		C	
//	13- 17	AA		C	
VCQYNU1HM334K	13- 49	AD		C	
VCSAPJ1AE336M	17- 2	AF		C	
VCSAPJ1CE226M	12- 42	AF		C	
//	12- 76	AF		C	
VCSAPJ1EE106M	12- 54	AF		C	
VCSAPJ1EE225M	12- 65	AD		C	
VCSAVU1VE334M	13- 5	AB		C	
VHDDA204K//-1	14- 37	AC		B	
//	14- 38	AC		B	
//	14- 39	AC		B	
//	14- 40	AC		B	
VHDiMN10///-1	12- 95	AC		B	
//	12- 96	AC		B	
//	12- 97	AC		B	
//	12- 98	AC		B	
VHD10E1////-1	13- 51	AA		B	
//	13- 53	AA		B	
VHD10E4////-1	13- 52	AB		B	
VHEHZ5C1///-1	12- 376	AB		B	
VHERD18EL2//-1	13- 207	AA		B	
VHERD22FB//-1	13- 208	AD		B	
//	13- 209	AD		B	
VHERD8.2EB/-1	13- 210	AB		B	
VHiBA10339F-1	12- 140	AD		B	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VHiBA4558F/-1	12- 139	AD		B	
VHiHM6264LF12	12- 119	AU		B	
//	12- 125	AU		B	
VHiH64180R18F	12- 107	AX		B	
//	12- 132	AX		B	
VHiLM311N//-1	13- 55	AD		B	
//	13- 66	AD		B	
VHiLM318M//-1	17- 10	AN		B	
VHiLU552B4/-1	12- 133	AS		B	
VHiLZ93M27///	14- 43	AR		B	
VHiLZ95H30/-1	12- 122	AX		B	
VHiLZ95N18/-1	12- 128	AR		B	
VHiLZ95S13/-1	12- 123	BL		B	
VHiMC14053/-1	13- 62	AE		B	
VHiMC14053BMF	12- 150	AE		B	
VHiMC14066BMF	12- 149	AD		B	
VHiMC1413P/-1	14- 45	AD		B	
//	14- 46	AD		B	
VHiMC74F139MF	12- 127	AH		B	
//	12- 129	AH		B	
//	12- 130	AH		B	
VHiMC74HC04MF	12- 141	AC		B	
//	12- 143	AC		B	
//	12- 145	AC		B	
VHiMC74HC14MF	12- 144	AE		B	
VHiMC74HC245F	12- 154	AG		B	
VHiMP7683/-1F	12- 126	AX		B	
VHiMSM62X42-A	12- 138	AW		B	
VHiM82C55AFP2	12- 124	AN		B	
VHiNJM4558D-1	13- 56	AN		B	
//	13- 57	AN		B	
//	13- 59	AN		B	
//	13- 60	AN		B	
//	13- 61	AN		B	
//	13- 63	AN		B	
//	13- 64	AN		B	
//	13- 65	AN		B	
VHiR96EFX//-1	12- 110	BR		B	
VHiSN74F157-1	12- 151	AH		B	
//	12- 152	AH		B	
//	12- 155	AH		B	
//	12- 156	AH		B	
VHiSM74F244-1	12- 153	AH		B	
//	12- 157	AH		B	
VHiSN74LS06MF	12- 147	AE		B	
VHiSN74LS13MF	12- 146	AE		B	
VHiSN7406NS-1	12- 142	AF		B	
//	12- 158	AF		B	
//	12- 159	AF		B	
VHiTD62064BP1	18- 7	AK		B	
VHiTHS50///-1	13- 54	AQ		B	
VHiTL084CN/-F	12- 148	AN		B	
VHiTMS4256Z80	12- 111	AZ		B	
//	12- 112	AZ		B	
//	12- 113	AZ		B	
//	12- 114	AZ		B	
//	12- 115	AZ		B	
//	12- 116	AZ		B	
//	12- 134	AZ		B	
//	12- 135	AZ		B	
//	12- 136	AZ		B	
//	12- 137	AZ		B	
VHiUPD35H73-1	17- 9	AZ		B	
VHiX2444P////	14- 44	AN		B	
VHi1G4B42//-1	13- 3	AD		B	
//	13- 4	AD		B	
VHi12G2000B21	13- 58	AX		B	
VHi27010FMH0B	12- 118	BK	N	B	
VHi27010FMi0D	12- 118	BK	N	B	
VHi27020FAL0B	12- 121	BL	N	B	
VHi27020FAM0C	12- 121	BL	N	B	
VHi27256FHU0B	12- 106	BF	N	B	
VHi43257GU12L	12- 131	BA		B	
VHi78214GC537	14- 42	AY		B	
VHi8749/FCR0B	12- 109	AY		B	
VHPGP1S53//-1	8- 41	AF		B	
//	20- 5	AF		B	
VHPLT4617E6-1	5- 51	BA		B	
VHPPC111S//-1	13- 79	AF		B	
VHPPC852///-1	13- 78	AE		B	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VHPPC852///-1	13- 80	AE		B	
VHViCPN20//-1	18- 8	AD		B	
VHVNV027D05-1	13- 204	AC		B	
VHVNV100D05-1	13- 203	AD		B	
VHVNV240D14-1	13- 202	AC		B	
VHVVR61S///-1	13- 201	AG		B	
VHV3P10W2//-1	13- 1	AN		B	
VRD-RB2EY000J	18- 9	AA		C	
//	18- 10	AA		C	
//	18- 11	AA		C	
//	18- 12	AA		C	
VRD-RB2EY472J	18- 20	AA		C	
VRD-RC2EY000J	12- 99	AA		C	
//	12- 100	AA		C	
//	12- 101	AA		C	
//	12- 102	AA		C	
//	12- 103	AA		C	
//	12- 104	AA		C	
//	12- 166	AA		C	
//	12- 167	AA		C	
//	13- 30	AA		C	
VRD-RC2EY103J	18- 21	AA		C	
VRD-RC2EY221J	18- 16	AA		C	
//	18- 17	AA		C	
//	18- 18	AA		C	
VRD-RC2EY471J	14- 73	AA		C	
VRD-RC2EY562J	18- 19	AA		C	
VRS-HT3AA101J	13- 95	AA		C	
VRS-HT3AA221J	13- 92	AA		C	
VRS-HT3AA223J	13- 91	AA		C	
VRS-HT3AA333J	13- 90	AA		C	
VRS-HT3AA560J	18- 14	AA		C	
//	18- 15	AA		C	
VRS-HT3AA561J	13- 93	AA		C	
VRS-HT3AA621J	13- 94	AA		C	
VRS-HT3DA181J	13- 97	AA		C	
VRS-HT3DA301J	13- 99	AA		C	
VRS-HT3DA561J	13- 96	AA		C	
VRS-HT3DA750J	13- 98	AA		C	
VRS-PT3AB911J	20- 6	AA		C	
VRS-TP2BD000J	17- 11	AA		C	
//	17- 12	AA		C	
VRS-TP2BD102J	14- 88	AA		C	
//	14- 90	AA		C	
//	14- 95	AA		C	
//	14- 104	AA		C	
//	14- 106	AA		C	
//	14- 109	AA		C	
//	14- 111	AA		C	
//	14- 113	AA		C	
//	14- 115	AA		C	
//	14- 120	AA		C	
//	14- 123	AA		C	
//	14- 124	AA		C	
//	14- 126	AA		C	
//	14- 129	AA		C	
//	14- 133	AA		C	
//	14- 134	AA		C	
//	14- 135	AA		C	
//	14- 136	AA		C	
//	14- 139	AA		C	
//	14- 140	AA		C	
//	14- 141	AA		C	
//	14- 142	AA		C	
//	14- 143	AA		C	
//	17- 15	AA		C	
VRS-TP2BD103J	14- 56	AA		C	
//	14- 57	AA		C	
//	14- 58	AA		C	
//	14- 59	AA		C	
//	14- 60	AA		C	
//	14- 61	AA		C	
//	14- 62	AA		C	
//	14- 64	AA		C	
//	14- 65	AA		C	
//	14- 66	AA		C	
//	14- 67	AA		C	
//	14- 68	AA		C	
//	14- 75	AA		C	
//	14- 76	AA		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VRS-TP2BD103J	14- 77	AA		C	
//	14- 78	AA		C	
//	14- 79	AA		C	
//	14- 80	AA		C	
//	14- 81	AA		C	
//	14- 82	AA		C	
//	14- 83	AA		C	
//	14- 84	AA		C	
//	14- 85	AA		C	
//	14- 86	AA		C	
//	14- 87	AA		C	
//	14- 89	AA		C	
//	14- 91	AA		C	
//	14- 92	AA		C	
//	14- 93	AA		C	
//	14- 94	AA		C	
//	14- 96	AA		C	
//	14- 97	AA		C	
//	14- 98	AA		C	
//	14- 99	AA		C	
//	14- 100	AA		C	
//	14- 101	AA		C	
//	14- 102	AA		C	
//	14- 103	AA		C	
//	14- 105	AA		C	
//	14- 107	AA		C	
//	14- 108	AA		C	
//	14- 110	AA		C	
//	14- 112	AA		C	
//	14- 116	AA		C	
//	14- 117	AA		C	
//	14- 118	AA		C	
//	14- 119	AA		C	
//	14- 130	AA		C	
//	17- 16	AA		C	
VRS-TP2BD105J	14- 72	AA		C	
VRS-TP2BD122J	14- 125	AA		C	
VRS-TP2BD202J	14- 47	AA		C	
//	14- 48	AA		C	
//	14- 49	AA		C	
//	14- 50	AA		C	
//	14- 51	AA		C	
//	14- 52	AA		C	
//	14- 53	AA		C	
//	14- 54	AA		C	
//	14- 55	AA		C	
//	14- 71	AA		C	
VRS-TP2BD221J	14- 63	AB		C	
//	14- 69	AB		C	
//	14- 138	AB		C	
VRS-TP2BD222J	17- 18	AA		C	
VRS-TP2BD331J	14- 70	AB		C	
VRS-TP2BD392F	14- 121	AA		C	
VRS-TP2BD472J	14- 127	AA		C	
//	14- 128	AA		C	
//	14- 131	AA		C	
//	14- 132	AA		C	
//	14- 137	AA		C	
//	17- 17	AA		C	
VRS-TP2BD473J	14- 114	AA		C	
//	14- 122	AA		C	
VRS-TP2BD561J	12- 358	AA		C	
VRS-TP2BD680J	12- 357	AA		C	
VRS-TP2BD682J	17- 14	AA		C	
VRS-TS2AD000J	12- 160	AA		C	
//	12- 161	AA		C	
//	12- 162	AA		C	
//	12- 163	AA		C	
//	12- 164	AA		C	
//	12- 165	AA		C	
//	13- 144	AA		C	
VRS-TS2AD100J	12- 306	AA		C	
//	12- 331	AA		C	
//	12- 332	AA		C	
//	12- 333	AA		C	
//	12- 334	AA		C	
//	12- 340	AA		C	
//	12- 341	AA		C	
VRS-TS2AD101J	12- 240	AA		C	
//	12- 241	AA		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VRS-TS2AD101J	12- 253	AA		C	
〃	12- 254	AA		C	
〃	12- 285	AA		C	
〃	12- 365	AA		C	
VRS-TS2AD102F	13- 131	AA		C	
VRS-TS2AD102J	12- 282	AA		C	
〃	12- 329	AA		C	
〃	13- 103	AA		C	
〃	13- 111	AA		C	
〃	13- 117	AA		C	
〃	13- 148	AA		C	
〃	13- 155	AA		C	
〃	13- 166	AA		C	
VRS-TS2AD103F	12- 186	AA		C	
〃	13- 153	AA		C	
〃	13- 167	AA		C	
〃	13- 172	AA		C	
VRS-TS2AD103J	12- 172	AA		C	
〃	12- 173	AA		C	
〃	12- 174	AA		C	
〃	12- 190	AA		C	
〃	12- 191	AA		C	
〃	12- 192	AA		C	
〃	12- 193	AA		C	
〃	12- 194	AA		C	
〃	12- 198	AA		C	
〃	12- 199	AA		C	
〃	12- 201	AA		C	
〃	12- 202	AA		C	
〃	12- 203	AA		C	
〃	12- 204	AA		C	
〃	12- 205	AA		C	
〃	12- 206	AA		C	
〃	12- 207	AA		C	
〃	12- 208	AA		C	
〃	12- 209	AA		C	
〃	12- 210	AA		C	
〃	12- 211	AA		C	
〃	12- 212	AA		C	
〃	12- 213	AA		C	
〃	12- 214	AA		C	
〃	12- 215	AA		C	
〃	12- 218	AA		C	
〃	12- 219	AA		C	
〃	12- 220	AA		C	
〃	12- 221	AA		C	
〃	12- 222	AA		C	
〃	12- 223	AA		C	
〃	12- 224	AA		C	
〃	12- 225	AA		C	
〃	12- 226	AA		C	
〃	12- 227	AA		C	
〃	12- 228	AA		C	
〃	12- 229	AA		C	
〃	12- 231	AA		C	
〃	12- 232	AA		C	
〃	12- 233	AA		C	
〃	12- 234	AA		C	
〃	12- 235	AA		C	
〃	12- 236	AA		C	
〃	12- 237	AA		C	
〃	12- 238	AA		C	
〃	12- 239	AA		C	
〃	12- 245	AA		C	
〃	12- 246	AA		C	
〃	12- 248	AA		C	
〃	12- 249	AA		C	
〃	12- 250	AA		C	
〃	12- 251	AA		C	
〃	12- 252	AA		C	
〃	12- 255	AA		C	
〃	12- 256	AA		C	
〃	12- 258	AA		C	
〃	12- 259	AA		C	
〃	12- 265	AA		C	
〃	12- 266	AA		C	
〃	12- 267	AA		C	
〃	12- 268	AA		C	
〃	12- 269	AA		C	
〃	12- 270	AA		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VRS-TS2AD103J	12- 272	AA		C	
〃	12- 273	AA		C	
〃	12- 281	AA		C	
〃	12- 288	AA		C	
〃	12- 293	AA		C	
〃	12- 294	AA		C	
〃	12- 307	AA		C	
〃	12- 315	AA		C	
〃	12- 316	AA		C	
〃	12- 317	AA		C	
〃	12- 318	AA		C	
〃	12- 319	AA		C	
〃	12- 321	AA		C	
〃	12- 322	AA		C	
〃	12- 324	AA		C	
〃	12- 328	AA		C	
〃	12- 336	AA		C	
〃	12- 351	AA		C	
〃	12- 352	AA		C	
〃	12- 359	AA		C	
〃	12- 360	AA		C	
〃	12- 366	AA		C	
〃	13- 100	AA		C	
〃	13- 102	AA		C	
〃	13- 107	AA		C	
〃	13- 108	AA		C	
〃	13- 110	AA		C	
〃	13- 112	AA		C	
〃	13- 113	AA		C	
〃	13- 114	AA		C	
〃	13- 115	AA		C	
〃	13- 123	AA		C	
〃	13- 147	AA		C	
〃	13- 160	AA		C	
〃	13- 165	AA		C	
VRS-TS2AD104J	13- 105	AA		C	
VRS-TS2AD105J	12- 283	AA		C	
〃	12- 320	AA		C	
VRS-TS2AD122J	12- 327	AA		C	
VRS-TS2AD123J	13- 177	AA		C	
VRS-TS2AD133J	13- 149	AA		C	
〃	13- 171	AA		C	
〃	13- 173	AA		C	
VRS-TS2AD153F	13- 168	AA		C	
VRS-TS2AD153J	13- 156	AA		C	
〃	13- 174	AA		C	
VRS-TS2AD163J	13- 151	AA		C	
VRS-TS2AD183F	13- 170	AA		C	
VRS-TS2AD183J	13- 102	AA		C	
VRS-TS2AD202J	12- 275	AA		C	
〃	12- 286	AA		C	
〃	12- 287	AA		C	
〃	12- 301	AA		C	
〃	12- 302	AA		C	
〃	12- 303	AA		C	
〃	12- 304	AA		C	
〃	12- 309	AA		C	
〃	12- 310	AA		C	
〃	12- 311	AA		C	
〃	12- 312	AA		C	
VRS-TS2AD203F	13- 141	AA		C	
〃	13- 142	AA		C	
〃	13- 154	AA		C	
〃	13- 175	AA		C	
〃	13- 176	AA		C	
VRS-TS2AD203J	13- 127	AA		C	
〃	13- 128	AA		C	
〃	13- 163	AA		C	
VRS-TS2AD221J	12- 271	AA		C	
〃	13- 157	AA		C	
VRS-TS2AD222J	12- 289	AA		C	
〃	12- 290	AA		C	
〃	12- 323	AA		C	
〃	12- 326	AA		C	
VRS-TS2AD223J	13- 162	AA		C	
VRS-TS2AD224J	13- 106	AA		C	
VRS-TS2AD243J	13- 109	AA		C	
VRS-TS2AD273J	13- 152	AA		C	
VRS-TS2AD275J	12- 196	AA		C	
VRS-TS2AD3R0J	12- 175	AA		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VRS-TS2AD302J	12- 200	AA		C	
VRS-TS2AD330J	12- 242	AA		C	
〃	12- 243	AA		C	
〃	12- 244	AA		C	
〃	12- 260	AA		C	
〃	12- 261	AA		C	
〃	12- 262	AA		C	
〃	12- 263	AA		C	
〃	12- 264	AA		C	
〃	12- 277	AA		C	
〃	12- 278	AA		C	
〃	12- 279	AA		C	
〃	12- 280	AA		C	
〃	12- 291	AA		C	
〃	12- 292	AA		C	
〃	12- 299	AA		C	
〃	12- 300	AA		C	
〃	12- 314	AA		C	
〃	12- 325	AA		C	
〃	12- 338	AA		C	
〃	12- 342	AA		C	
〃	12- 343	AA		C	
〃	12- 344	AA		C	
〃	12- 345	AA		C	
〃	12- 346	AA		C	
〃	12- 347	AA		C	
〃	12- 348	AA		C	
〃	12- 349	AA		C	
VRS-TS2AD332J	12- 184	AA		C	
〃	12- 247	AA		C	
VRS-TS2AD333J	13- 125	AA		C	
VRS-TS2AD362J	13- 146	AA		C	
VRS-TS2AD393J	13- 101	AA		C	
〃	13- 161	AA		C	
VRS-TS2AD471J	12- 295	AA		C	
〃	12- 308	AA		C	
〃	12- 337	AA		C	
〃	12- 353	AA		C	
〃	12- 354	AA		C	
〃	12- 361	AA		C	
〃	12- 362	AA		C	
〃	13- 104	AA		C	
〃	13- 143	AA		C	
〃	13- 159	AA		C	
VRS-TS2AD472J	12- 169	AA		C	
〃	12- 170	AA		C	
〃	12- 171	AA		C	
〃	12- 176	AA		C	
〃	12- 177	AA		C	
〃	12- 178	AA		C	
〃	12- 179	AA		C	
〃	12- 180	AA		C	
〃	12- 183	AA		C	
〃	12- 185	AA		C	
〃	12- 189	AA		C	
〃	12- 216	AA		C	
〃	12- 217	AA		C	
〃	12- 230	AA		C	
〃	12- 274	AA		C	
〃	12- 276	AA		C	
〃	12- 296	AA		C	
〃	12- 297	AA		C	
〃	12- 298	AA		C	
〃	12- 305	AA		C	
〃	12- 313	AA		C	
〃	12- 335	AA		C	
〃	12- 339	AA		C	
〃	12- 355	AA		C	
〃	12- 356	AA		C	
〃	12- 363	AA		C	
〃	12- 364	AA		C	
〃	12- 367	AA		C	
〃	13- 116	AA		C	
〃	13- 145	AA		C	
VRS-TS2AD473J	13- 120	AA		C	
VRS-TS2AD562J	12- 257	AA		C	
〃	12- 350	AA		C	
〃	13- 132	AA		C	
VRS-TS2AD622J	13- 124	AA		C	
VRS-TS2AD681J	12- 284	AA		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VRS-TS2AD683J	13- 164	AA		C	
VRS-TS2AD754J	13- 118	AA		C	
VRS-TS2AD822J	13- 126	AA		C	
VRS-TS2AD823J	13- 150	AA		C	
VRS-TS2AD912J	12- 330	AA		C	
〃	13- 169	AA		C	
VRSTS2AD1583F	13- 121	AA		C	
〃	13- 130	AA		C	
VRSTS2AD3482F	12- 188	AA		C	
VRSTS2AD3652F	12- 187	AA		C	
VRSTS2AD4642F	12- 195	AA		C	
VRSTS2AD5110F	12- 181	AA		C	
〃	12- 182	AA		C	
VRSTS2AD5112F	13- 119	AA		C	
VRSTS2AD6040F	13- 158	AA		C	
VRSTS2AD6342F	13- 134	AA		C	
〃	13- 138	AA		C	
VRSTS2AD6983F	13- 122	AA		C	
〃	13- 129	AA		C	
〃	13- 135	AA		C	
〃	13- 136	AA		C	
〃	13- 139	AA		C	
〃	13- 140	AA		C	
VRSTS2AD8662F	12- 168	AA		C	
〃	12- 197	AA		C	
VRSTS2AD8872F	13- 133	AA		C	
〃	13- 137	AA		C	
VSDTC114EK/-1	13- 81	AB		B	
〃	13- 82	AB		B	
〃	13- 85	AB		B	
〃	13- 86	AB		B	
〃	13- 87	AB		B	
〃	13- 88	AB		B	
〃	13- 89	AB		B	
VS2SA1036KQRC	12- 369	AB		B	
〃	12- 370	AB		B	
VS2SA950-Y/-1	18- 13	AC		B	
VS2SC2412KS-1	17- 13	AB		B	
VS2SC2712-G-1	13- 83	AC		B	
〃	13- 84	AC		B	
〔X〕					
XBBSD30P04000	7- 28	AA		C	
XBBSE30P04000	2- 1	AA		C	
〃	7- 94	AA		C	
XBPBZ40P06K00	2- 37	AA		C	
〃	6- 52	AA		C	
XBPSD30P04K00	2- 22	AA		C	
〃	5- 35	AA		C	
XBPSD30P05K00	2- 17	AA		C	
XBPSD30P05000	3- 14	AA		C	
XBPSD30P06KS0	7- 54	AA		C	
〃	12- 380	AA		C	
XBPSD30P06K00	2- 20	AA		C	
XBPSD30P06000	8- 42	AA		C	
〃	23- 22	AA		C	
XBPSD30P14000	7- 3	AA		C	
XBPSD30P25KS0	2- 26	AA		C	
XBPSD40P30000	3- 12	AA		C	
XBPSE30P08XS0	1- 51	AA		C	
XEBSD30P08000	2- 5	AA		C	
〃	6- 19	AA		C	
〃	7- 2	AA		C	
〃	7- 7	AA		C	
XEBSE30P08000	7- 4	AA		C	
XEPSD30P05000	8- 1	AA		C	
XEPSD30P06000	1- 13	AA		C	
〃	1- 66	AA		C	
〃	5- 1	AA		C	
〃	5- 55	AA		C	
〃	6- 29	AA		C	
XEPSD30P08000	4- 22	AA		C	
〃	5- 3	AA		C	
XEPSN30P20000	8- 7	AA		C	
XHBSD30P06000	7- 19	AA		C	
XHBSD30P08000	8- 19	AA		C	
XHBSD30P18000	7- 6	AA		C	
XHBSD40P06000	8- 2	AA		C	
XHBSD40P10J00	2- 2	AA		C	
XHBSD40P10000	2- 34	AA		C	
XHBSE30P06000	7- 21	AA		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
XHBSE30P10000	1- 58	AA		C	
XHBSE30P12000	1- 53	AA		C	
XHPSD30P04000	5- 59	AA		C	
//	9- 33	AA		C	
XHPSD30P06000	1- 29	AA		C	
//	2- 24	AA		C	
//	6- 79	AA		C	
//	7- 88	AA		C	
//	9- 6	AA		C	
//	20- 7	AA		C	
XHPSD30P08000	9- 2	AA		C	
XHPSD30P12000	6- 23	AA		C	
XHPSE40P10000	6- 2	AA		C	
XHSSE30P06000	10- 15	AA		C	
XNESD30-24000	7- 8	AA		C	
XRESJ30-06000	5- 28	AA		C	
XRESJ40-06000	4- 19	AA		C	
//	5- 17	AA		C	
XRESP20-04000	6- 55	AA		C	
XRESP25-04000	1- 62	AA		C	
XRESP40-06000	7- 65	AA		C	
//	8- 28	AA		C	
//	9- 14	AA		C	
XRESP50-06000	3- 3	AA		C	
//	7- 44	AA		C	
//	7- 97	AA		C	
XRESP60-07000	7- 35	AA		C	
XUSSD30P06000	1- 17	AA		C	
XWHSD40-08100	3- 20	AA		C	
//	7- 20	AA		C	
XWHUW50-08120	8- 30	AA		C	
XXXSP30L10000	5- 45	AB		C	
[0]					
0CGiPAAD2ANGF	16- 74	AX		C	
0CGiPAAD2B1F/	16- 43	AX		C	
0CGiPAAD2CN1F	16- 58	AX		C	
0CGiPAAD2CN4F	16- 59	AQ		C	
0CGiPAAD2CN5F	16- 75	AX		C	
0CGiPAAD2C1F/	16- 16	AT		C	
0CGiPAAD2C10F	16- 24	BB		C	
0CGiPAAD2C11F	16- 25	AK		C	
0CGiPAAD2C12F	16- 26	AK		C	
0CGiPAAD2C13F	16- 27	AK		C	
0CGiPAAD2C14F	16- 28	AK		C	
0CGiPAAD2C16F	16- 29	AK		C	
0CGiPAAD2C17F	16- 30	AT		C	
0CGiPAAD2C2F/	16- 21	AK		C	
0CGiPAAD2C21F	16- 73	AK		C	
0CGiPAAD2C24F	16- 31	AT		C	
0CGiPAAD2C27F	16- 32	AT		C	
0CGiPAAD2C30F	16- 34	AT		C	
0CGiPAAD2C40F	16- 35	AK		C	
0CGiPAAD2C41F	16- 36	AK		C	
0CGiPAAD2C42F	16- 33	AK		C	
0CGiPAAD2C43F	16- 37	AT		C	
0CGiPAAD2C5F/	16- 20	AT		C	
0CGiPAAD2C8F/	16- 22	AT		C	
0CGiPAAD2C9F/	16- 23	AK		C	
0CGiPAAD2D1F/	16- 38	AT		C	
0CGiPAAD2D2F/	16- 39	AK		C	
0CGiPAAD2D3F/	16- 40	AK		C	
0CGiPAAD2D4F/	16- 41	AX		C	
0CGiPAAD2D7F/	16- 42	AK		C	
0CGiPAAD2FH0F	16- 70	AK		C	
//	16- 71	AK		C	
0CGiPAAD2F1F/	16- 62	AT		A	
0CGiPAAD2F2F/	16- 63	AT		A	
0CGiPAAD2F3F/	16- 64	AT		A	
0CGiPAAD2GHF/	16- 72	AQ		C	
0CGiPAAD2HSAF	16- 66	AX		C	
0CGiPAAD2HSBF	16- 67	AX		C	
0CGiPAAD2HSCF	16- 68	AX		C	
0CGiPAAD2HSDF	16- 69	AT		C	
0CGiPAAD2iC1F	16- 51	BK		B	
0CGiPAAD2iC2F	16- 52	AT		B	
0CGiPAAD2iC3F	16- 49	AT		B	
0CGiPAAD2iNLF	16- 61	BF		C	
0CGiPAAD2L1F/	16- 53	BK		C	
0CGiPAAD2L10F	16- 82	AK		C	
0CGiPAAD2L2F/	16- 54	BK		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
0CGiPAAD2L3F/	16- 55	AX		C	
0CGiPAAD2L4F/	16- 56	BB		C	
0CGiPAAD2L5F/	16- 76	AK		C	
0CGiPAAD2L8F/	16- 80	AX		C	
0CGiPAAD2L9F/	16- 81	AQ		C	
0CGiPAAD2P1F/	16- 45	BB		B	
0CGiPAAD2P2F/	16- 46	AX		B	
0CGiPAAD2Q1F/	16- 44	BB		B	
0CGiPAAD2R1F/	16- 1	AK		C	
0CGiPAAD2R10F	16- 8	AK		C	
0CGiPAAD2R16F	16- 77	AK		C	
0CGiPAAD2R17F	16- 9	AK		C	
0CGiPAAD2R18F	16- 10	AK		C	
0CGiPAAD2R19F	16- 11	AK		C	
0CGiPAAD2R20F	16- 12	AK		C	
0CGiPAAD2R21F	16- 13	AK		C	
0CGiPAAD2R25F	16- 14	AK		C	
0CGiPAAD2R26F	16- 15	AT		C	
0CGiPAAD2R3F/	16- 2	AT		C	
0CGiPAAD2R4F/	16- 3	AK		C	
0CGiPAAD2R40F	16- 17	AK		C	
0CGiPAAD2R41F	16- 18	AK		C	
0CGiPAAD2R42F	16- 19	AK		C	
0CGiPAAD2R43F	16- 78	AK		C	
0CGiPAAD2R6F/	16- 4	AT		C	
0CGiPAAD2R7F/	16- 5	AT		C	
0CGiPAAD2R8F/	16- 6	AK		C	
0CGiPAAD2R9F/	16- 7	AK		C	
0CGiPAAD2SR1F	16- 50	AX		B	
0CGiPAAD2SWPF	16- 65	AX		C	
0CGiPAAD2SW1F	16- 60	BB		B	
0CGiPAAD2TR1F	16- 47	AX		B	
0CGiPAAD2T1F/	16- 57	BS		B	
0CGiPAAD2VR1F	16- 79	AQ		B	
0CGiPAAD2V1F/	16- 48	AQ		B	
0CGiPADDCN1//	15- 40	AX		C	
0CGiPADDCN11/	15- 43	AT		C	
0CGiPADDCN13/	15- 44	AT		C	
0CGiPADDCN2//	15- 41	BB		C	
0CGiPADDCN3//	15- 42	AX		C	
0CGiPADDC51//	15- 21	AK		C	
0CGiPADDC53//	15- 22	AK		C	
0CGiPADDC55//	15- 23	AQ		C	
0CGiPADDC59//	15- 24	AT		C	
0CGiPADDC62//	15- 25	AK		C	
0CGiPADDC64//	15- 26	AK		C	
0CGiPADDC65//	15- 27	AK		C	
0CGiPADDC66//	15- 28	AK		C	
0CGiPADDC67//	15- 29	AK		C	
0CGiPADDD51//	15- 18	AK		B	
0CGiPADDD54//	15- 19	AX		B	
0CGiPADDD55//	15- 20	AK		B	
0CGiPADDF4///	15- 45	AT		A	
0CGiPADDHS///	15- 46	AT		C	
0CGiPADDiC51/	15- 33	AT		B	
0CGiPADDiC52/	15- 34	AT		B	
0CGiPADDiC53/	15- 35	BK		B	
0CGiPADDiC54/	15- 36	AT		B	
0CGiPADDL51//	15- 38	BB		C	
0CGiPADDL52//	15- 39	BF		C	
0CGiPADDQ51//	15- 30	AX		B	
0CGiPADDQ52//	15- 31	AK		B	
0CGiPADDQ53//	15- 32	AK		B	
0CGiPADDR51//	15- 1	AK		C	
0CGiPADDR52//	15- 2	AT		C	
0CGiPADDR53//	15- 3	AK		C	
0CGiPADDR56//	15- 4	AK		C	
0CGiPADDR57//	15- 5	AK		C	
0CGiPADDR58//	15- 6	AK		C	
0CGiPADDR59//	15- 7	AK		C	
0CGiPADDR60//	15- 8	AK		C	
0CGiPADDR61//	15- 9	AK		C	
0CGiPADDR62//	15- 10	AK		C	
0CGiPADDR65//	15- 11	AK		C	
0CGiPADDR66//	15- 12	AK		C	
0CGiPADDR67//	15- 13	AK		C	
0CGiPADDR68//	15- 14	AK		C	
0CGiPADDR69//	15- 15	AK		C	
0CGiPADDR71//	15- 16	AK		C	
0CGiPADDR73//	15- 17	AT		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
0CGiPADDVR1//	15- 37	AK		B	
0EMKE25122061	4- 13	AA		C	
0EMTE08871003	4- 7	AN		C	
0EMTE08875001	4- 8	AR		C	
0EMTE18540001	4- 5	AQ		C	
0EMTE18571001	4- 10	AG		C	
0EMTE18584001	4- 6	AK		C	
0EMTE18873003	4- 9	AP		C	
0EMTE18875002	4- 11	AD		C	
0EMTE19003002	4- 12	BP		E	
0EMTE19070502	4- 2	BD		D	
0EMTE19070503	4- 2	BD	N	D	
0EMTE19073002	4- 1	AQ		C	
0EMTE19073003	4- 1	AQ		C	
0EMTE19074001	4- 3	AC		C	
0EMTE19075001	4- 4	AC		D	
0EMTG03330001	4- 14	AA		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	

CAUTION FOR BATTERY REPLACEMENT

(Danish) ADVARSEL !
Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri
af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandoren.

(English) Caution !
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's instructions.

(Finnish) VAROITUS
Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden
mukaisesti.

(French) ATTENTION
Il y a danger d'explosion s' il y a remplacement incorrect
de la batterie. Remplacer uniquement avec une batterie du
même type ou d'un type recommandé par le constructeur.
Mettre au rébut les batteries usagées conformément aux
instructions du fabricant.

(Swedish) VARNING
Explosionsfare vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent
typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens
instruktion.

SHARP

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